EXPERIMENTAL INVESTIGATION OF INCOMPRESSIBLE FLOW PAST JET FLAPPED AIRFOILS

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THESIS

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by

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ABSTRACT

Experiments were conducted in the Naval Postgraduate School low-speed wind tunnel to investigate the low-speed aerodynamic characteristics of an airfoil with a jet flap deflected at ninety degrees, in and out of ground effect. These tests consisted of detailed static pressure measurements on the airfoil, and helium bubble flow visualization studies of the resulting flow patterns. Substantial agreement was obtained with previous experiments by N. A. Dimmock at the National Gas Turbine Establishment in England.

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TABLE OF SYMBOLS

A	Slot area.
α	Geometric angle of attack of airfoil.
C_j	Jet momentum coefficient, $C_j = J/qS$.
C_{l_p}	Lift coefficient due to pressure distribution over airfoil.
C_{l_t}	Total lift coefficient including C_{l_p} and vertical component of jet thrust.
C_{m_p}	Moment coefficient due to pressure distribution over airfoil.
C_{m_t}	Total moment coefficient including C_{m_p} and moment created by the jet thrust, taken about the leading edge.
$C_{m_{c/2}}$	Total moment coefficient about the mid-chord.
C_p	Pressure coefficient, $C_p = (p - p_o)/q$.
d/c	Distance of airfoil above ground level in chords.
ε_{sb}	Solid blockage factor.
J	Jet thrust or jet momentum.
p	Local static pressure.
P_j	Plenum chamber pressure.
p_o	Freestream static pressure.
p_t	Stagnation or total head pressure.
q	True dynamic pressure.
ρ	Density.
S	Airfoil planform area.
t	Slot width.
Θ	Jet deflection angle.
V	Velocity.

X/C Fraction of chord.

X_{cl}/C Position of center of lift on airfoil in fractions of chord.

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I. INTRODUCTION

The pure jet flap consists of a thin sheet of air ejected from a slot spanning the trailing edge of the airfoil. The term "flap" is derived from the similarity of the effect of the jet and the effect of a mechanical flap on the airfoil's flow field. The potential of the jet flap is not limited to being an alternative for the mechanical flap. The existence of the jet modifies the circulation around the airfoil. Theoretically, "supercirculation" can be obtained with sufficiently high jet momentum. This supercirculation induces lift in addition to the direct vertical component of the jet and the pressure lift due to angle of attack. These combine to produce the total lift. Theoretically, the thrust due to the jet also will be almost entirely recovered in horizontal thrust regardless of the deflection angle of the jet.

Experimental and theoretical work related to the jet flap began as early as 1917 when Föttinger suggested controlling the boundary layer on a mechanical flap by blowing a sheet of air over the upper leading edge [Ref. 1]. In 1927, Seewald and Wieland [Refs. 13 and 14] investigated Föttinger's suggestion but the beneficial effects were not proved until 1931 by Bamber [Ref. 5]. Many experiments have been conducted based on Föttinger's concept and, by increasing the momentum of the jet, have led to the boundary layer control devices on current aircraft.

Schubauer, in 1933, conducted experiments using the jet flap as a means of thrust augmentation [Ref. 6]. His experiments could have led to confirming the thrust hypothesis, but he did not use high enough values for jet momentum. Re-evaluated, his test results may be considered the first jet flap results measured.

In 1939, Hagedorn and Ruden [Ref. 10], using blown flaps with high jet momentum coefficients to investigate boundary layer stabilization, discovered and correctly analysed the supercirculation principle. Valenci, Parigi, and Borgel independently discovered this effect again in 1942 [Ref. 12].

The conceptual leap leading to the current jet flap state of the art was made by H. Constant in 1951. While investigating the possibility of using bleed air from a jet turbine engine blown over a mechanical flap for boundary layer control, he conceived the idea of combining the lifting and propulsive systems of an aircraft into the wing. As Director of the National Gas Turbine Establishment in England, Constant was in a position to explore his concept in depth. Between 1952 and 1955 numerous papers on the subject were issued by N.G.T.E. In 1955, N. A. Dimmock conducted a series of experiments to explore the possibilities of the jet flap and confirm the lift and thrust hypotheses [Ref. 7].

With the principles and the possibilities of the jet flapped airfoil established, efforts were begun to theoretically model the jet flap. In 1956, Spence presented a linearized solution for the lift coefficients of thin jet

flapped airfoils [Ref. 8]. The improvements in computer technology have enabled theorists to develop non-linear solutions for predicting the aerodynamic characteristics of the jet flap, with research continuing for improved solutions for high jet momentum coefficients and large jet deflection angles.

Current experimental emphasis is being directed toward applying the jet flap to V/STOL aircraft. NASA Ames and NASA Langley are currently investigating the characteristics of a modified jet flap for a STOL transport [Ref. 15]. This modified jet flap is termed an externally blown flap and consists of impinging the exhaust of an underslung turbo-fan engine on a highly deflected mechanical flap. With a swept trailing edge, the exhaust is directed in a sheet downward and lift is obtained not only from the redirected thrust but also from the supercirculation generated. North American-Rockwell and NASA Ames are currently working on V/STOL aircraft using another derivative of the jet flap, the augmenter-wing concept. The augmenter-wing consists of a primary jet sheet exhausting into a spanwise channel formed by sections of the airfoil or a dual flap system. The secondary flow induced through the channel by the primary jet augments both the thrust and the lift generated. Figure 1 illustrates these two variations of the pure jet flap.

Since Dimmock, little work has been done to to obtain experimental information on the two-dimensional jet flap characteristics. Therefore, this thesis was conducted to add to

the experimental data base. Dimmock's model was copied and his experiments reproduced, not so much to verify his results, but to ensure valid results from his test set-up for further experiments over an extended range of parameters, including ground effect, to be performed at the Naval Postgraduate School.

II. TEST SET-UP

The complete set-up consists of an airfoil, side or end plates which serve as the mounting apparatus, jet air supply, and data acquisition equipment. The airfoil cross-section is a 12.5% ellipse. The airfoil is made of five one-quarter inch thick aluminum ribs, three-eighths inch thick aluminum skin and milled aluminum leading and trailing edges. The three internal ribs were cut out to allow free circulation of air within the wing while the two outer ribs form the seal for the interior or plenum chamber of the wing. The skin was shaped to preserve the airfoil shape and fastened by screws to both the ribs and the leading and trailing edges. All joints were sealed with epoxy to prevent leakage of air. The outer surface of the skin was milled smooth and then grooved to allow the placement of one-sixteenth inch steel tubing to carry the pressure distribution information. The leading and trailing edges were also grooved to allow placement of the static pressure taps. After the tubes were in place, the airfoil surface was again smoothed by using epoxy to fill in the space between the tubing and the grooves. One-thousandth inch holes were then drilled through the epoxy and into the tubes to act as the static pressure sources. Additionally, the trailing edge was made in two pieces to form the slot. This manner of construction necessitated the placement of the slot one-fourth of an inch from the trailing edge of the airfoil to minimize the amount of spreading

of the slot when the plenum was pressurized. Figure 2 shows a cross-section of the airfoil and the position of the static pressure ports.

The end-plates were constructed in such a manner as to also function as the wind tunnel mounting apparatus. (See Figure 3). In order to increase the effective aspect ratio and thus insure sufficient two-dimensionality, the end-plates were made as large as possible. Because of the tunnel access hatch, the end-plate size was limited to 1.375 chord lengths fore and aft and 1.5 chord lengths above and 2.0 chord lengths below the center of the airfoil. From Figure 15, Chapter 7 of Reference 3, endplates increased the effective aspect ratio from 1.5 to 10.575. The port end-plate was constructed of two pieces of plexiglass. The large rectangular outer plate had a cutout as described in Figure 4. The inner plate was a sixteen-inch diameter circle. Holes were drilled in the circle to allow the pressure information tubes to pass outside of the end-plates. The circular piece was secured to the outer plate by means of two screws fastened to the inner piece, passed through slots in the outer piece and then held in place by butterfly nuts. This arrangement allowed the angle of attack to be easily changed. The starboard end-plate was made of plywood with a cutout for the plenum air supply tube. The air supply tube served as the pivot for changing the airfoil angle of attack. With the addition of the second air supply tube it was necessary to cut a slot to allow the airfoil to be rotated. This slot

was then covered with a thin piece of sheet metal to maintain the continuity of the side plate.

The compressed air for the model was supplied by a Gardner-Denver model AD 1001 air compressor capable of a 52 cubic feet per minute rate of discharge, an Ingersoll-Rand type 30 compressor capable of an output of 49 cubic feet per minute and a Sears model 102 (catalogue no. 17315) compressor capable of delivering 17.2 cubic feet per minute of air. The total volumetric flow rate of air available then is 118.2 cubic feet per minute discounting losses between compressors and test set-up. The compressed air was ducted from the compressors by three-quarter inch steel pipe to a Schrader model 3534-1000 line filter to remove the moisture from the air. The air was then fed to a Schrader model 3466X pressure regulator to insure supply pressure. A one-half inch stainless steel tube was used to transport the air into the plenum chamber of the airfoil. It was necessary to use tubing of this size to insure adequate clearance between the tube and the inner surfaces of the plenum chamber to allow for free circulation.

The size of the slot was dependent upon the amount of air available from the compressors. Additionally, the total area of the slot could be no larger than the smallest cross-sectional area of any of the tubing used to duct the air to the plenum of the airfoil. The three-quarter inch piping from the compressors has a cross-sectional area of approximately 0.442 square inches. With a chord of twelve inches, the slot width was thus limited to less than 0.036 inches.

By modeling the airfoil plenum chamber and slot as a settling chamber and nozzle, theoretical isentropic expansion was used to determine the flow rate required to choke the flow at the throat of the nozzle. In this manner the required flow rate for various slot widths could be determined. The development of this procedure is contained in Appendix A.

By this method, the theoretical flow rate necessary to choke the flow through a twelve inch slot with a width of 0.036 inches would be 220.9 cubic feet per minute. The slot width on N. A. Dimmock's airfoil was 0.02 inches. The flow rate required to choke that slot would be 122.6 cubic feet per minute. Both of these values are in excess of the flow rate available from the installed compressors. By adopting a nominal slot width of 0.01 inches, the required flow rate was found to be 61.3 cubic feet per minute. This flow rate is well within the capacity of the available compressors, and was thus chosen.

As the model suitability tests were made, the slot width spread from 0.01 inches to 0.012 inches giving a slot cross-sectional area of 0.144 square inch. It was then impossible to choke the flow at the slot as the plenum air feed tube had a smaller cross-sectional area. A second one-half inch stainless steel tube was inserted into the airfoil one inch forward of the original tube. The smallest area in the system was again the slot and the required flow rate of 73.56 cubic feet per minute was within the capacity of the air supply.

The pressure distribution information was acquired by means of the one-sixteenth inch steel tubes inlaid on the surface of the airfoil. Outside of the end-plate, vinyl tubing was connected to the steel tubes. The vinyl tubing was then passed through the tunnel floor and connected to a manometer board. The static pressure information from the airfoil was recorded and compared with the reading from a tube left open to the atmosphere.

Plenum chamber pressures were read by means of a Wallace and Tiernon Model Fa 145 pressure gage. This instrument is calibrated in gage inches of mercury, which allowed the most accurate readings of plenum chamber pressure. Pressures could be read to within 0.2 inches of mercury.

When performing the helium bubble flow visualization studies, the test set-up was moved to the smoke tunnel. As pressure distribution information was not required for these tests, the manometer board and vinyl tubing was disconnected. The additional equipment required for these tests was a Sage Action Inc. bubble generating head and a high intensity light source [Ref. 2].

III. WIND TUNNEL

Experimental work for this thesis was done in the Naval Postgraduate School low speed wind tunnel. The tunnel was designed by the Aerolab Development Company of Pasadena, California, and is of the single return type, measuring 64 feet in length and between 21.5 and 25.5 feet in width. The power for the tunnel is provided by a 100 horsepower electric motor coupled to a three-bladed variable pitch fan by a four-speed Dodge truck transmission.

The test section of the low speed tunnel has a cross-sectional area of 9.88 square feet, approximately one-tenth that of the settling chamber. It is rectangular in design and incorporates frosted glass fillets to illuminate the model. The walls of the test section are slightly divergent to counteract the contraction due to boundary layer growth. A breather slot is installed immediately downstream of the test section.

Located on the wall of the settling chamber is a temperature gage which is connected to the thermocouple extending into the tunnel. This gage indicates the temperature of the air in the settling chamber in degrees Fahrenheit. On each wall of the settling chamber is located a static pressure tap. These four taps are connected to a common manifold so that possible peculiarities of the flow at some point will not greatly influence the results. A static tap ring of similar design is located in the contraction cone near the test

section. These two sets of static ports are connected to a monometer which, when properly calibrated, give accurate indication of test section velocity without obstructing the flow.

In order to calibrate the two rings of static ports, a pitot-static tube was mounted in the center of the test section. The pitot-static tube measures Δp when connected to a manometer. Since it is mounted far enough away from the tunnel walls to be outside the effects of the wall boundary layer, the velocity at these speeds is found from the relation

$$p_2 + \frac{1}{2} \rho V_{true}^2 = p_t$$

By measuring p and the true dynamic pressure at several speeds, the tunnel may be calibrated by plotting Δp versus q_{true}. This curve is plotted as Fig. 7 and the slope is called the tunnel calibration factor.

Due to the presence of the model in the wind tunnel and the resulting decrease in cross-sectional area available for the air flow, a correction to the dynamic pressure is necessary. This constraint on the flow pattern is the solid blockage factor. The dynamic pressure increase caused by solid blocking is a function of model thickness, thickness distribution, model size and tunnel test section shape. The solid blocking velocity increment at the model is much less than that calculated from a direct area reduction, since the streamlines near the tunnel wall are displaced the most.

The solid blocking correction, ε_{sb}, is defined in terms of the velocity increment ΔV and the uncorrected test section velocity V_u by:

$$\varepsilon_{sb} = \frac{\Delta V}{V_u} = \frac{K_1 \tau_1 \text{ (model volume)}}{C^{3/2}}$$

where

C = tunnel test section area

K_1 = body shape factor

τ_1 = factor for tunnel shape and model span to tunnel width ratio.

Reference 9 is the source for information concerning wind tunnel correction. The calculation of solid blockage factor and the previously described corrections are contained in Appendix B. No wake blockage corrections were applied to the jet flapped airfoil data.

IV. TEST PROGRAM

The primary goal for this thesis was to gather information on the aerodynamic characteristics of the jet flap. To this end it was imperative that the suitability of the model and the accuracy of the experimental techniques be verified. The suitability testing consisted of determining the limits of jet momentum coefficients attainable and deciding on a tunnel velocity. While investigating the suitability of the airfoil, the need to add another plenum chamber air supply tube became apparent. With this change incorporated into the design and the tunnel velocity set at one hundred feet per second, jet momentum coefficients in the neighborhood of 0.4 could be maintained. Eight plenum chamber pressures were selected which produced jet momentum coefficients representative of the attainable range.

Using these plenum chamber pressures and the described tunnel velocity, tests were performed to duplicate work by N. A. Dimmock at the British National Gas Turbine Establishment. To duplicate this work, pressure distribution information was collected with the airfoil at zero angle of attack and the jet energized by the prescribed plenum chamber pressures. The pressure distribution information was graphically integrated to determine the total lift and moment coefficients and aerodynamic center position. These values were then compared with the work done by Mr. Dimmock [Ref. 7]. Additional tests were conducted with the airfoil at

angles of attack varying from -2.5 degrees to +20 degrees, at the various plenum chamber pressures. As the maximum lift coefficient was found to be in the vicinity of 7.5 degrees angle of attack, further data reduction was limited to angles of attack between -2.5 degrees and +12.5 degrees.

The model was next tested in ground effect. Ground effect was simulated by placing a thin sheet of metal, the size of the area between the endplates, at various levels below the wing. The levels were measured in fractions of chord lengths, d/c, below the centerline of the wing at zero angle of attack. Two chord lengths below the airfoil was considered out of ground effect [Ref. 4], and is the actual distance of the airfoil above the tunnel floor. The values of d/c included in the ground effect studies were 1.5, 1.0, 0.75, 0.50, and 0.25.

Pressure distribution information was acquired for the jet momentum coefficients resulting from the same plenum chamber pressures, at various angles of attack, for all d/c values. As the airfoil came closer to the "ground" the angle of attack was varied from -5.0 to +10.0 degrees for the four highest plenum chamber pressures at a d/c of 1.0, and for all plenum chamber pressures at the smaller values of d/c.

As a means of demonstrating the effect of the jet flap on the flow field surrounding the airfoil, a helium bubble flow visualization technique was utilized. This technique is undergoing study by Sage Action Inc., with funding from the Navy. In this technique neutrally buoyant bubbles are

illuminated and photographed while passing through the flow field surrounding a model. The Sage Action bubble generating device produces soap bubbles which are helium filled. By varying the amount of helium, bubble solution and compressed air, the size of the bubbles can be changed to produce bubbles which are neutrally buoyant.

For this thesis, the helium bubble technique was used to demonstrate the flow field rather than gather data. To do this, the model was moved into the smoke tunnel where the bubble generating head and the high intensity light are located. As the maximum tunnel velocity of the smoke tunnel is approximately 30 feet per second, it was necessary to compute plenum chamber pressures which gave approximately the same jet momentum coefficients as were obtained in the low speed tunnel at 100 feet per second. Photographs of the airfoil in the illuminated, bubble saturated flow field were taken for various values of d/c at each value, while the plenum chamber pressure was cycled through all eight of the new pressures.

V. THRUST CALIBRATION

The determination of the jet momentum coefficient requires an accurate measurement of the actual jet thrust. The calculation of the theoretical jet momentum or thrust is described in Appendix C. From previous work done on the subject, the theoretical values are usually about five percent higher than the actual thrust. If the results of this thesis are to be compared with previous work, the actual values for the thrust at various plenum chamber pressures must be found.

The most advantageous method of determining the thrust would be to use a force balance and record the horizontal force along with vertical force and pitching moment. By this method, the jet momentum would be known at each plenum pressure regardless of the prevailing ambient conditions. With the model configuration previously described, the force balance could not be used due to the side plates being an integral part of the model when installed in the wind tunnel.

The use of an orifice plate was considered. An orifice plate would allow accurate calculation of the mass flow rate just prior to air entry into the airfoil. By the law of continuity, this flow rate would be the same as the jet slot mass flow rate and the jet momentum could thus be calculated. The orifice plate calculations could also be done at each plenum pressure as the experiment was being performed giving the jet momentum at the prevailing ambient conditions. Tests showed, however, that the available orifice plates were

unable to withstand the pressures encountered for the range of jet momentum coefficients required.

This development necessitated the use of a method less desirable than described above. After all tests were conducted the model was disassembled and the airfoil alone was mounted on a force balance. After zeroing the balance, the airfoil was pressurized without tunnel airflow and the resulting force recorded for various plenum chamber pressures. This test was conducted under a specific set of atmospheric conditions. The results of this test are plotted on Figure 8 and are the basis for thrust calibration for all experiments for this thesis done in the low speed wind tunnel.

VI. DISCUSSION OF RESULTS

There were several difficulties encountered with the model and mounting apparatus. The primary problem was the determination of the true dynamic pressure in the test section with the test set-up installed. Figure 14 shows a pressure coefficient on the lower surface of the airfoil (close to the leading edge) that is greater than unity. If the dynamic pressure were correct, that point on the airfoil would be under the influence of a pressure larger than the stagnation pressure, which is impossible. Contributing to the inaccurate determination of the dynamic pressure is the currently unsolved problem of calculating wake blockage. Additionally, while the solid blockage correction was performed for the mounting apparatus as described by Pope [Ref. 9], these calculations did not include the model volume. Also an irregularity on the upper surface of the airfoil was discovered. The irregularity, located at 12.5 percent of the chord, is readily apparent in Figure 9 and affects all pressure distributions. The spanwise pressure taps did indicate that the middle section of the airfoil was experiencing reasonable two-dimensional flow.

Figures 9 through 14 are provided to indicate the variation of the pressure distribution with jet momentum coefficient. Note especially the rearward pressure peak indicative of the induced lift of the jet flap. Figure 15 shows the effect of angle of attack on the pressure distribution. These

figures are similar in shape and magnitude to the pressure distributions obtained by Dimmock [Ref. 7]. Figure 16 more accurately indicates the degree of agreement between the results of this thesis and those of Dimmock. Figures 17 and 18 show the lift curve slopes obtained from this model. Additional points are needed before any comparison can be made between these slopes and those of previous work.

Figure 19 shows the relationship between lift and pitching moment at various jet momentum coefficients. It indicates the agreement between the results of this thesis and those of Dimmock. Figure 20 indicates that the positions of the center of lift on this model and the model built by Dimmock are similar throughout the range of jet momentum coefficients. The agreement of results shown in these two figures and Figure 16 suggests adequate duplication of previous work to warrant the use of the model in further test programs.

Figures 21, 22 and 23 are included to indicate the effect of ground proximity on the pressure distribution over the airfoil. Figure 24 shows the effect of angle of attack on the pressure distribution with the airfoil three-quarters of a chord above the ground. The values for the pressure coefficients for the series of ground effect studies are contained in Tables 4 through 51.

Figures 25 and 26 are included to aid in visualizing the effect of the jet flap on the flow field. No subjective conclusions are included nor intended to be drawn from these photographs.

VII. RECOMMENDATIONS

Follow-up work concerning this thesis should include investigations to clarify uncertainties contained in this report. Primary emphasis should be placed on more accurately determining the true dynamic pressure in the low-speed wind tunnel test section. It is recommended that the tunnel calibration be conducted with the model mounting apparatus installed in the tunnel. The pitot-static tube used for this calibration should then be placed between the side plates, and the calibration factor determined. Once true dynamic pressure can be accurately determined, a specific value for dynamic pressure should be used for all tests. This would enable the experimenter to perform various tests at the same jet momentum coefficient rather than the same plenum chamber pressures.

The irregularity on the upper surface of the airfoil should be removed by smoothing the epoxy covering the static pressure tube, which is located at 12.5 percent of the chord. The effect of smoothing the epoxy can be checked by taking pressure distribution information at zero angle of attack and no jet blowing. An additional static pressure tube should be added near the trailing edge on the lower surface of the airfoil. This tube will aid in more closely determining the shape of the pressure distribution in this vicinity.

Future tests with this model should include a better determination of the vertical force due to the jet, and

information concerning the horizontal force. To this end it is recommended that the model be mounted on a force balance while the tunnel is operating. Information is needed for determining the thrust in the horizontal direction in order to investigate the validity of the thrust hypothesis. The use of pressure distribution for finding horizontal force is not recommended due to the small values and their sensitivity to the fitting of the curve to the experimental pressure distribution points. Additional investigations with this model should include repeating the tests conducted for this thesis with the 60 and 30 degree jet deflection angle trailing edges.

APPENDIX A

FLOW RATE CALCULATION FOR CHOKED FLOW

Assumptions:

steady, one-dimensional flow

isentropic expansion

velocity at the throat of the nozzle is sonic

FR = volumetric flow rate = AV

A = slot area = 0.144 $in.^2$

V = velocity at the throat = $M\sqrt{\gamma g_c RT}$

but M = 1.0

V = $\sqrt{\gamma g_c RT}$

γ = 1.4

then FR = $A\sqrt{\gamma g_c RT}$ cubic feet per minute

APPENDIX B

WIND TUNNEL CALCULATIONS

Ideal Test Section Velocity Calculation

Assumptions:

Momentum: $p + \frac{\rho}{2} V^2 = \text{constant} = p_t$

Continuity: $\rho AV = \text{constant}$

Incompressibility: $\rho = \text{constant}$

State: $p = \rho RT$

$$2p_1 + \rho_1 V_1^2 = 2p_2 + \rho_2 V_2^2$$

$$V_2^2 = \frac{2(p_1 - p_2)}{\rho_2} + \frac{\rho_1}{\rho_2} V_1^2$$

$$\rho_1 = \rho_2$$

$$\rho_1 A_1 V_1 = \rho_2 A_2 V_2$$

then

$$V_2^2 = \frac{2(p_1 - p_2)}{\rho_2} + V_2^2 \left(\frac{A_2}{A_1}\right)^2$$

and

$$V_{2\,ideal}^2 = \frac{2(p_1 - p_2)}{\rho[1-(A_2/A_1)^2]}$$

or

$$V_{ideal} = \sqrt{\frac{2\Delta p}{\rho[1-(A_2/A_1)^2]}}$$

Solid Blockage due to Mounting Apparatus

$$\varepsilon_{sb} = \frac{\Delta V}{V} \quad \frac{K_1 \tau_1 \text{ (model volume)}}{C^{3/2}}$$

Volume of port side plate = 0.2517 + 0.0291 = 0.2808 feet^3

Volume of starboard side plate = 0.2517 feet^3

Volume of deck plate = 0.1736 feet^3

$K_1 = 0.895$

$\tau_1 = 0.89$

$C = 9.88 \text{ feet}^2$

then

$$\varepsilon_{sb} = \frac{(.895)(.89)(.7061)\ \text{ft}^3}{(9.88\ \text{ft}^2)^{3/2}} = 0.0184$$

and

$$q = q_u(1 + 2\varepsilon)$$

$$q = q_u(1.0368)$$

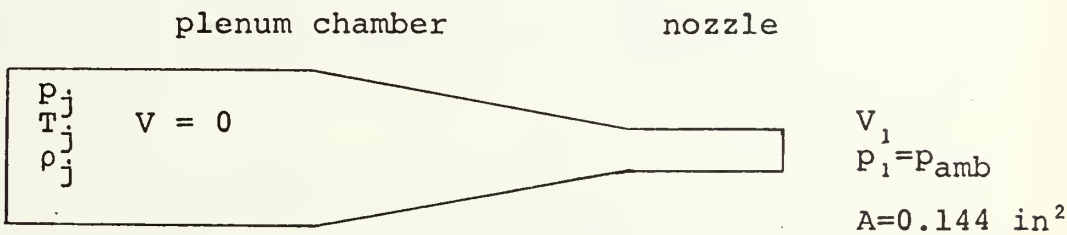
APPENDIX C

CALCULATION OF THEORETICAL JET MOMENTUM

Assumptions:

steady one-dimensional flow

isentropic expansion



J = Total Jet Momentum

$C_j = J/qS$ Jet Momentum Coefficient

$$Q = AV_1$$

$$J = \rho_1 Q V_1$$

$$J = \rho_1 A V_1^2 \qquad \rho_1 = \frac{p_1}{RT_1}$$

Then

$$J = \frac{p_1}{RT_1} A M_1^2 \gamma RT \qquad V_1^2 = M^2 \gamma RT_1$$

or

$$J = \gamma p_1 A M_1^2 \qquad \frac{p_j}{p_1} = \left(1 + \frac{\gamma-1}{2} M_1^2\right)^{\gamma/\gamma-1}$$

then   therefore

$$J = \frac{2A\gamma p_1}{\gamma-1}\left[\left(\frac{p_j}{p_1}\right)^{\gamma-1/\gamma} - 1\right] \qquad M_1^2 = \frac{2}{\gamma-1}\left[\left(\frac{p_j}{p_1}\right)^{\gamma-1/\gamma} - 1\right]$$

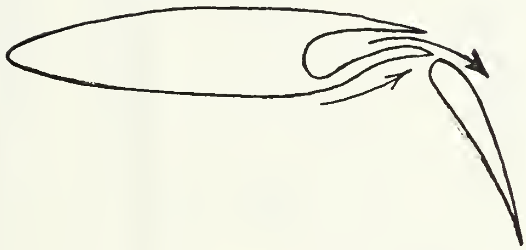
For $\frac{p_1}{p_j} > .5283$ i.e. $M < 1.0$

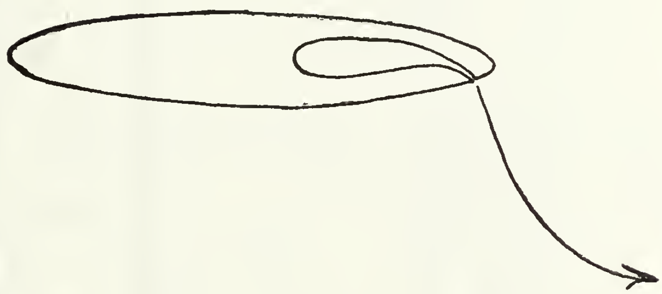
APPENDIX D

FIGURE 1

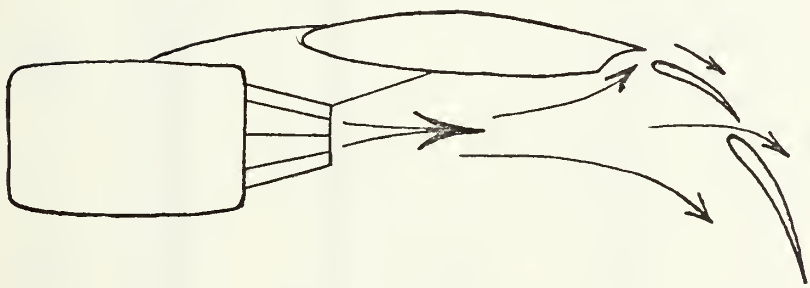
VARIATIONS OF THE JET FLAP

PURE JET FLAPS





EXTERNALLY BLOWN JET FLAP



THRUST AUGMENTING JET FLAP

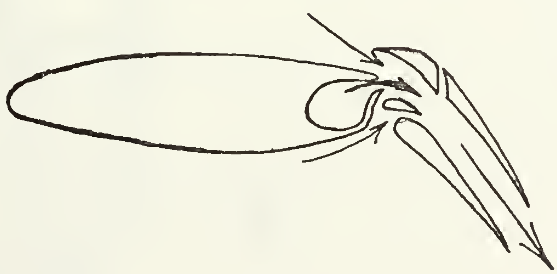
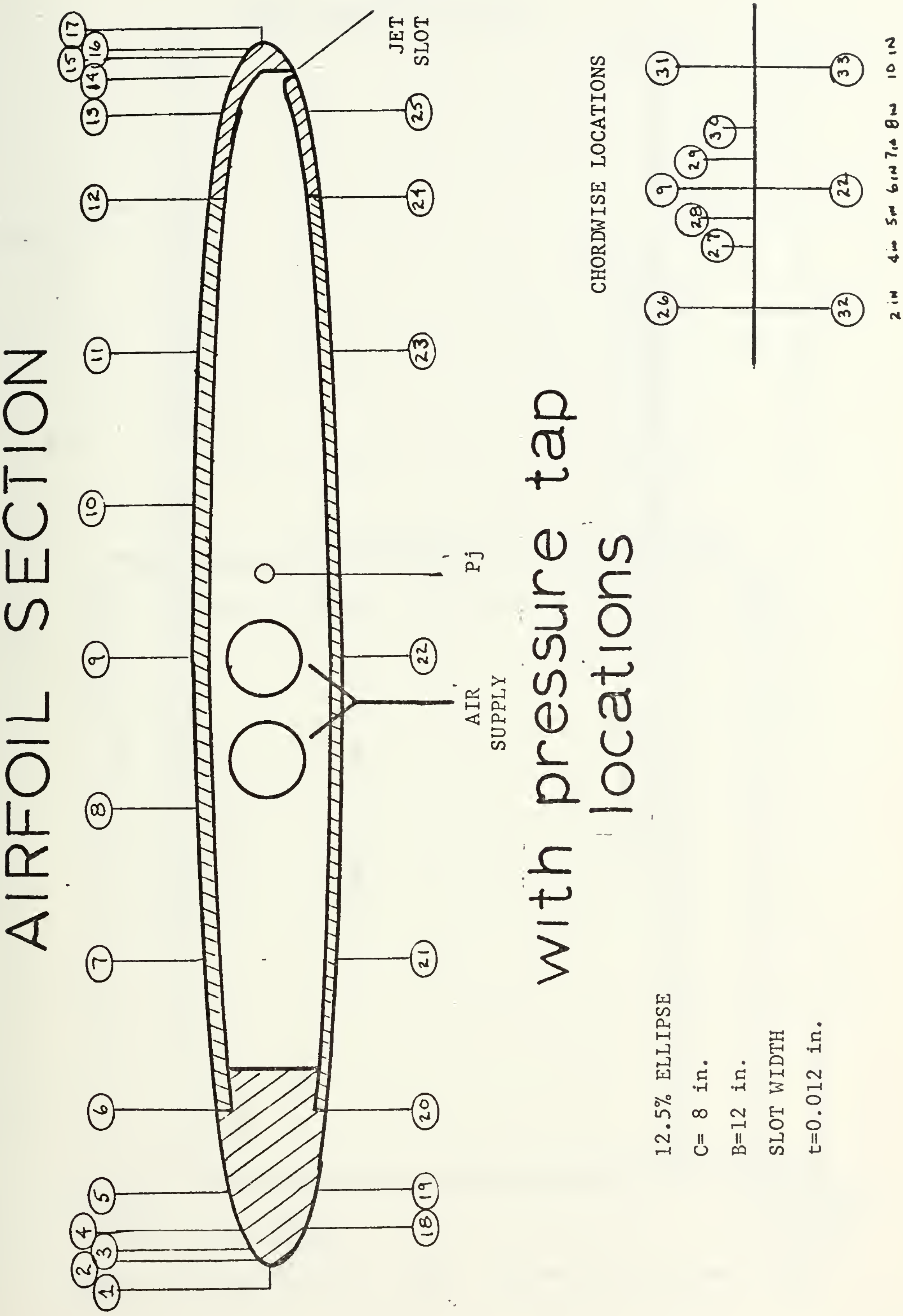


FIGURE 2



AIRFOIL SECTION
with pressure tap locations
JET SLOT
Pj
AIR SUPPLY
CHORDWISE LOCATIONS
12.5% ELLIPSE
C= 8 in.
B=12 in.
SLOT WIDTH
t=0.012 in.

FIGURE 3

TUNNEL MOUNTING APPARATUS

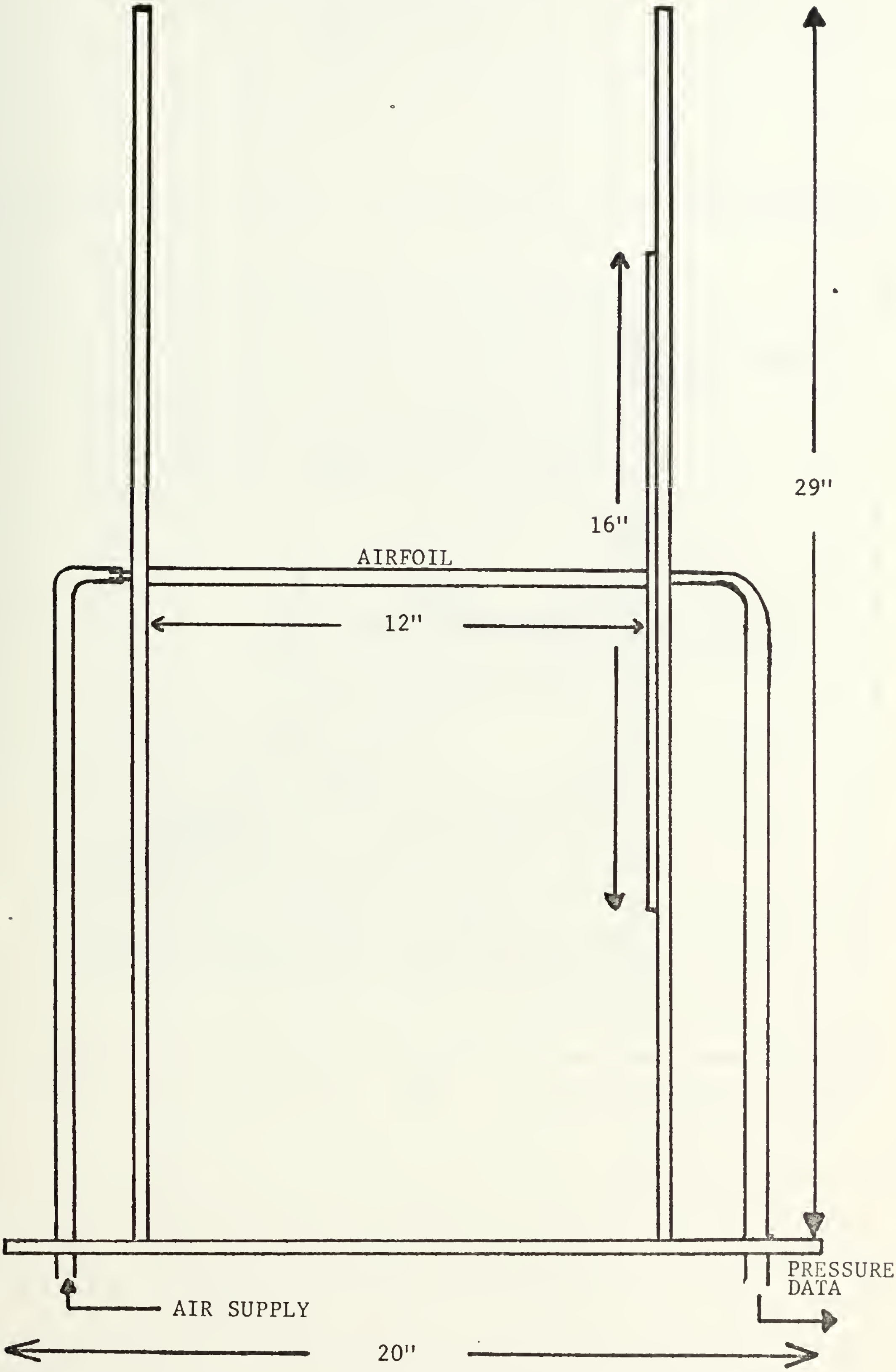


FIGURE 4

PORT SIDE PLATE

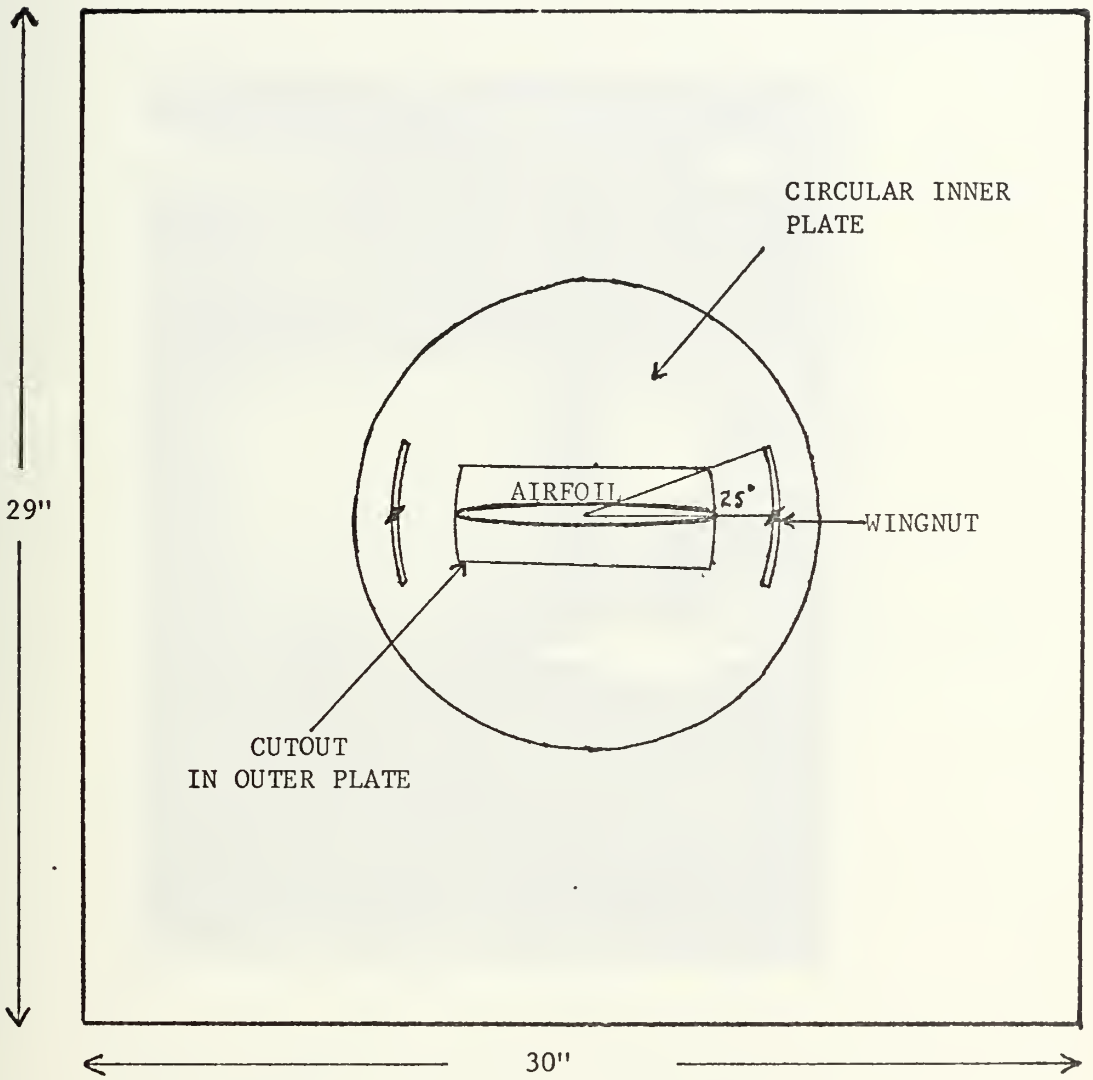
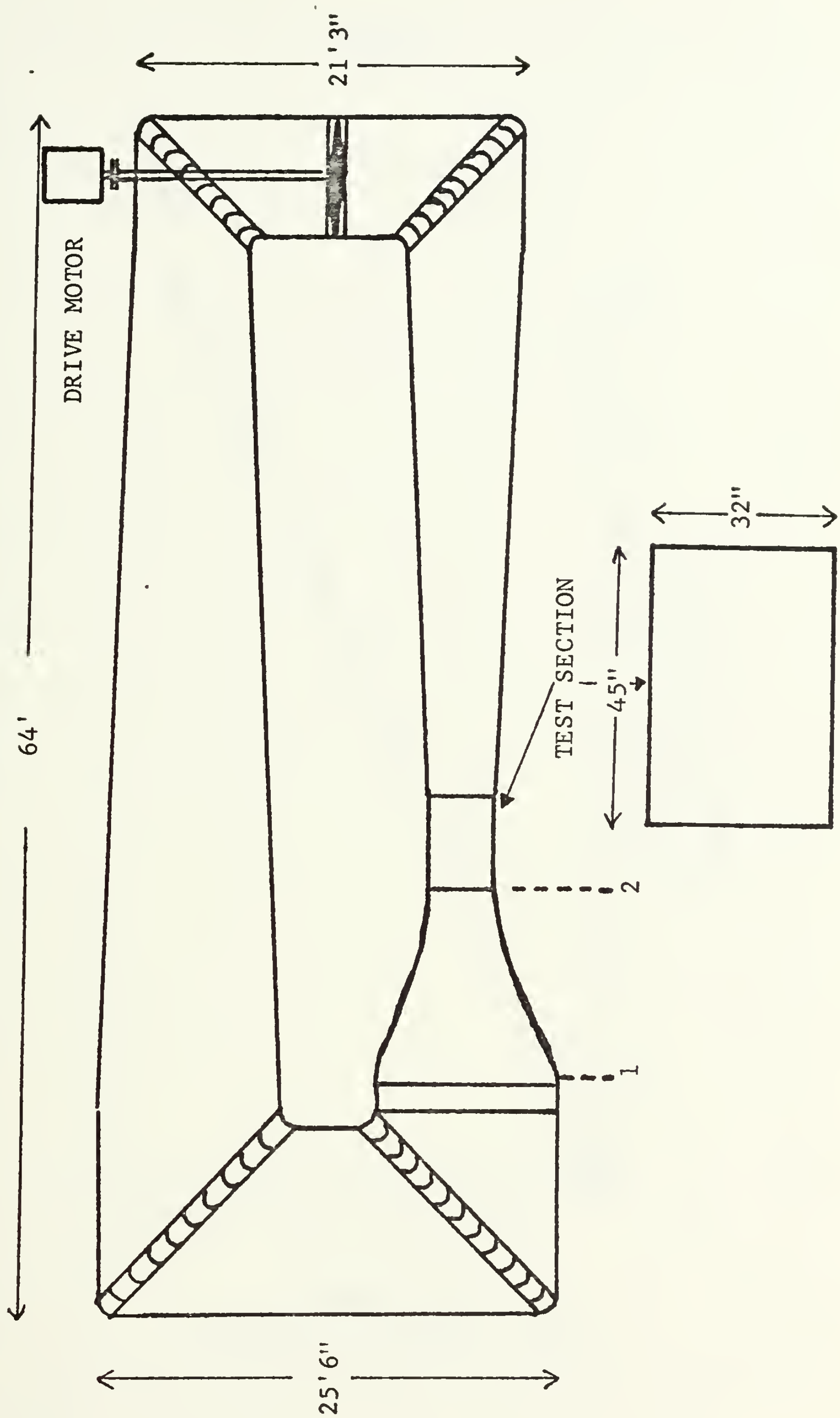


FIGURE 5

DATA ACQUISITION EQUIPMENT

FIGURE 6



WIND TUNNEL SCHEMATIC

FIGURE 7

TUNNEL CALIBRATION FACTOR

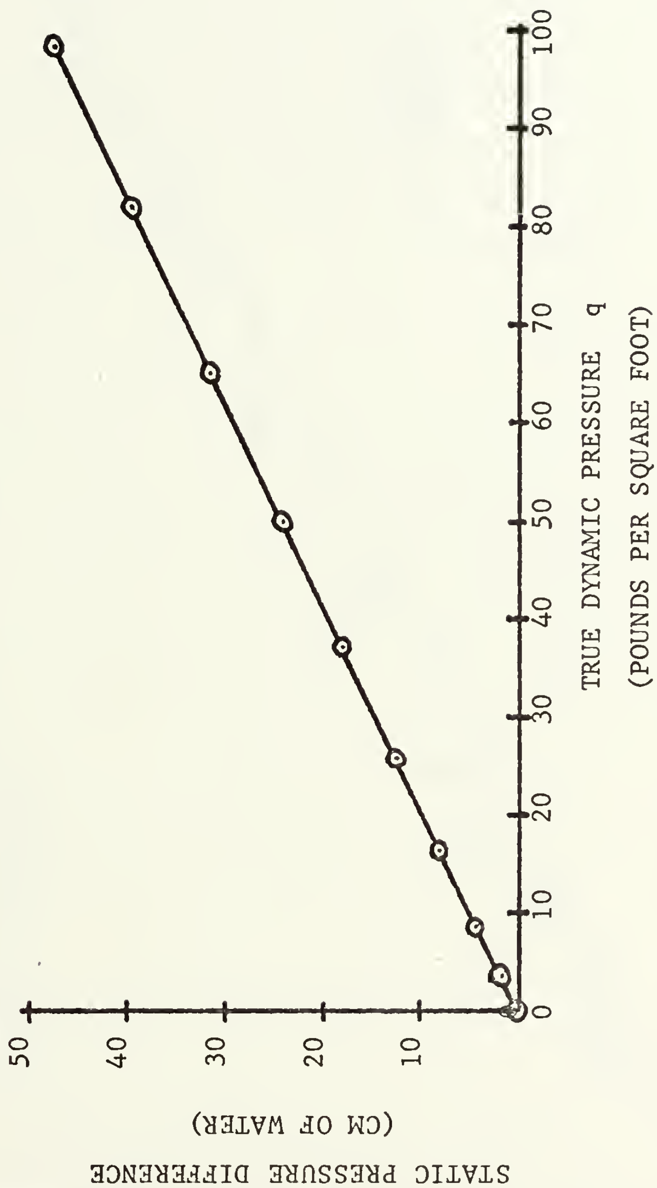


FIGURE 8

THRUST CALIBRATION CURVE

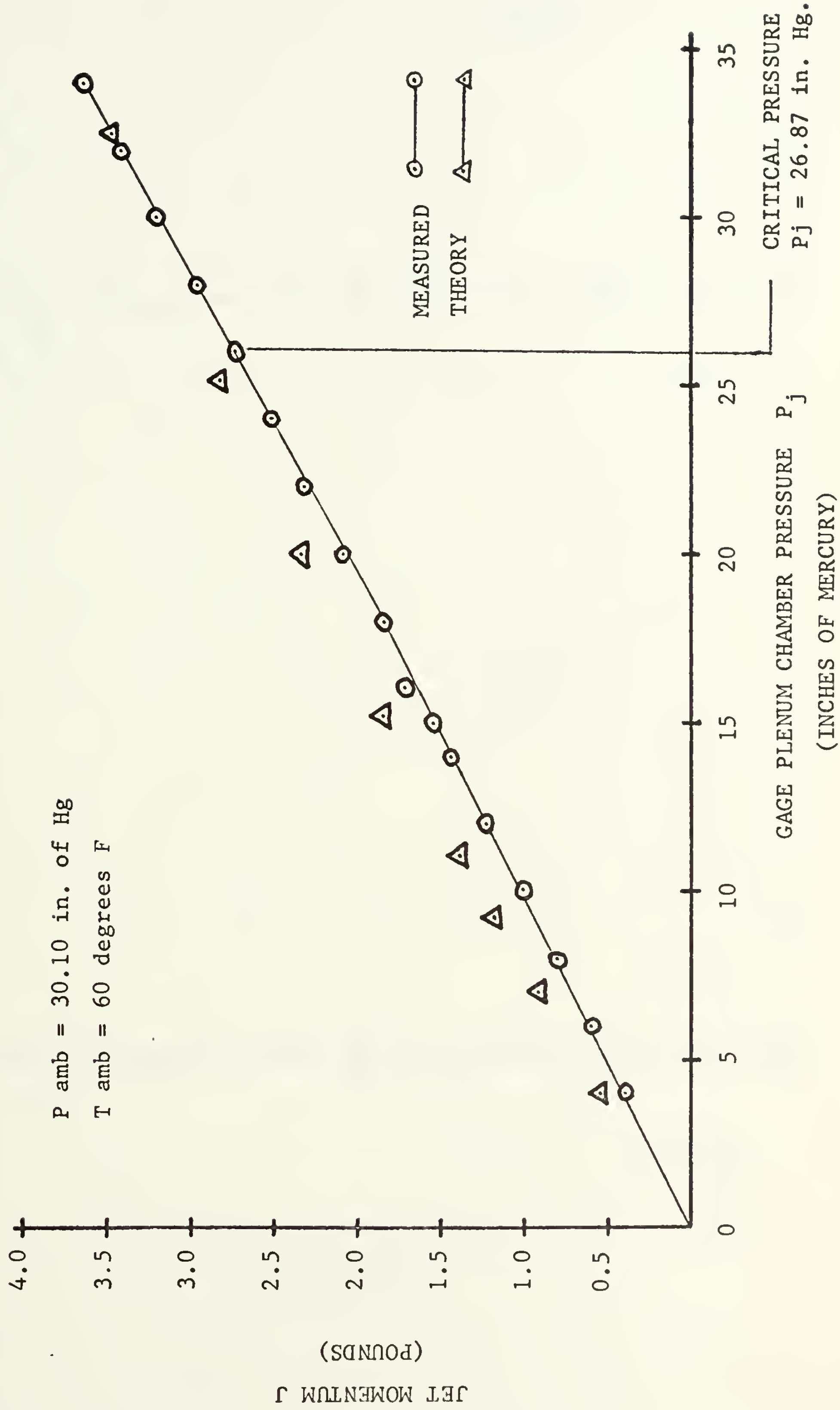


FIGURE 9

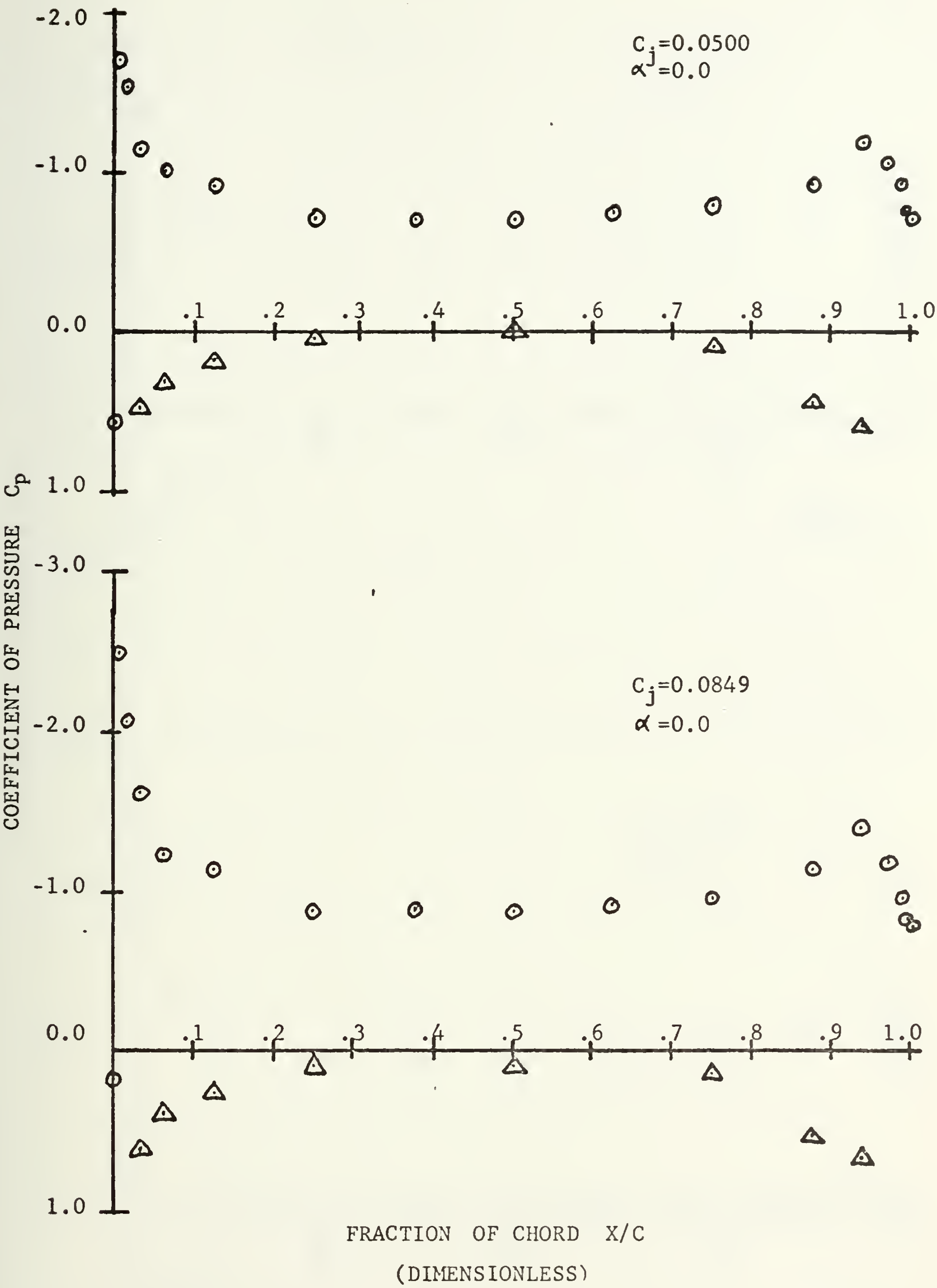
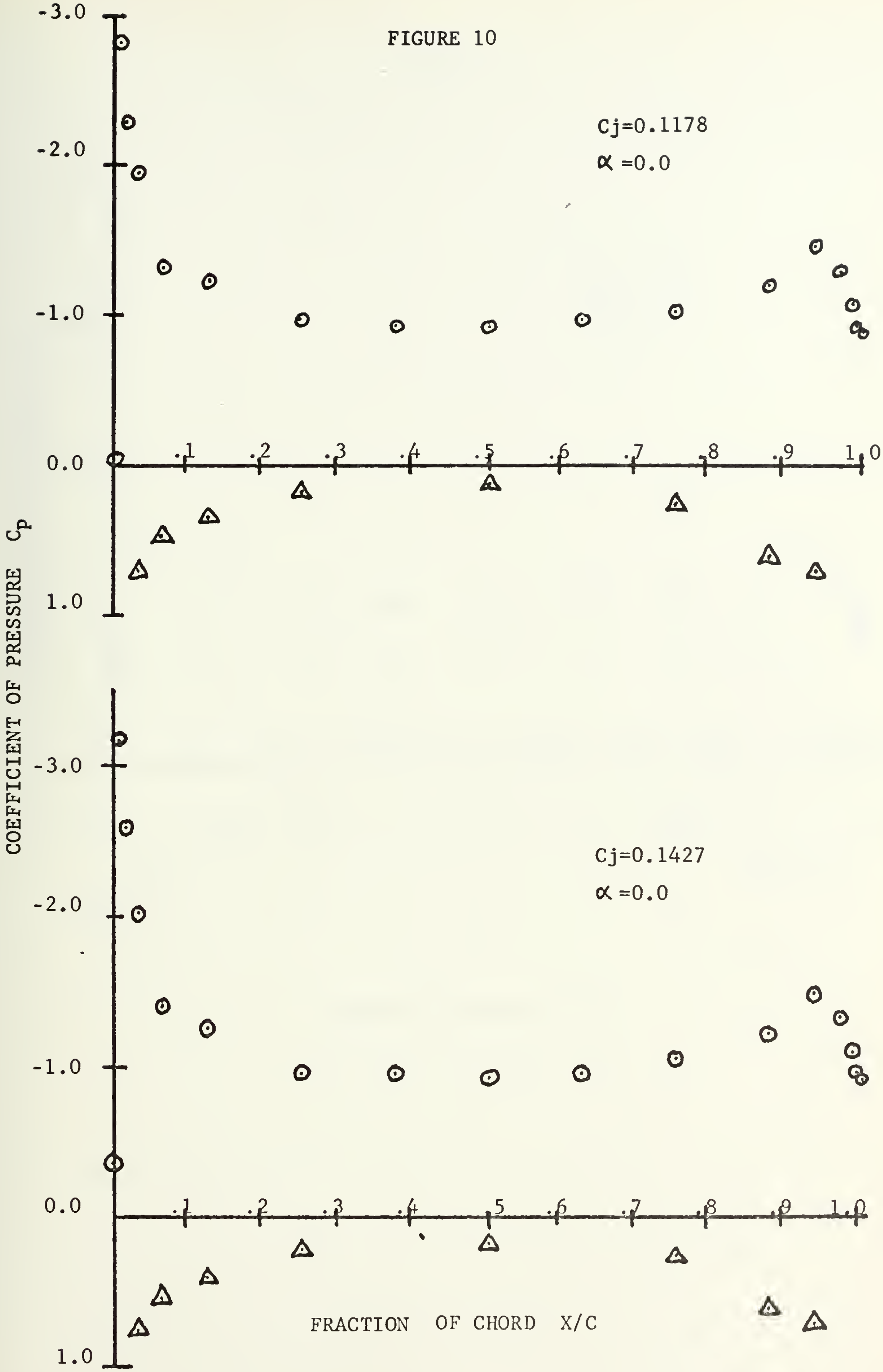
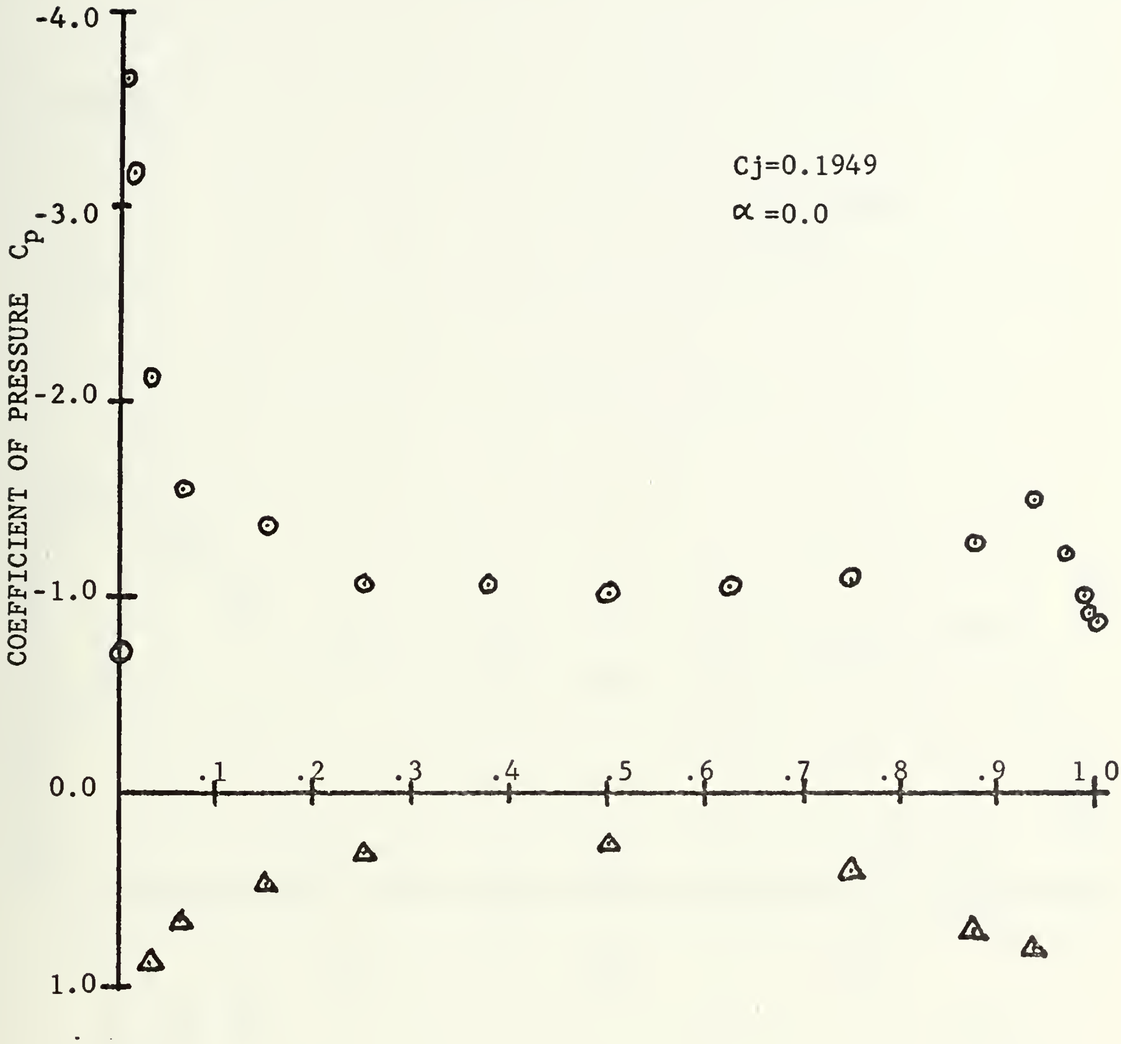

-2.0
-1.0
0.0
1.0
C_j=0.0500
α=0.0
.1
.2
.3
.4
.5
.6
.7
.8
.9
1.0
COEFFICIENT OF PRESSURE C_p
-3.0
-2.0
-1.0
0.0
1.0
C_j=0.0849
α=0.0
FRACTION OF CHORD X/C
(DIMENSIONLESS)

FIGURE 10



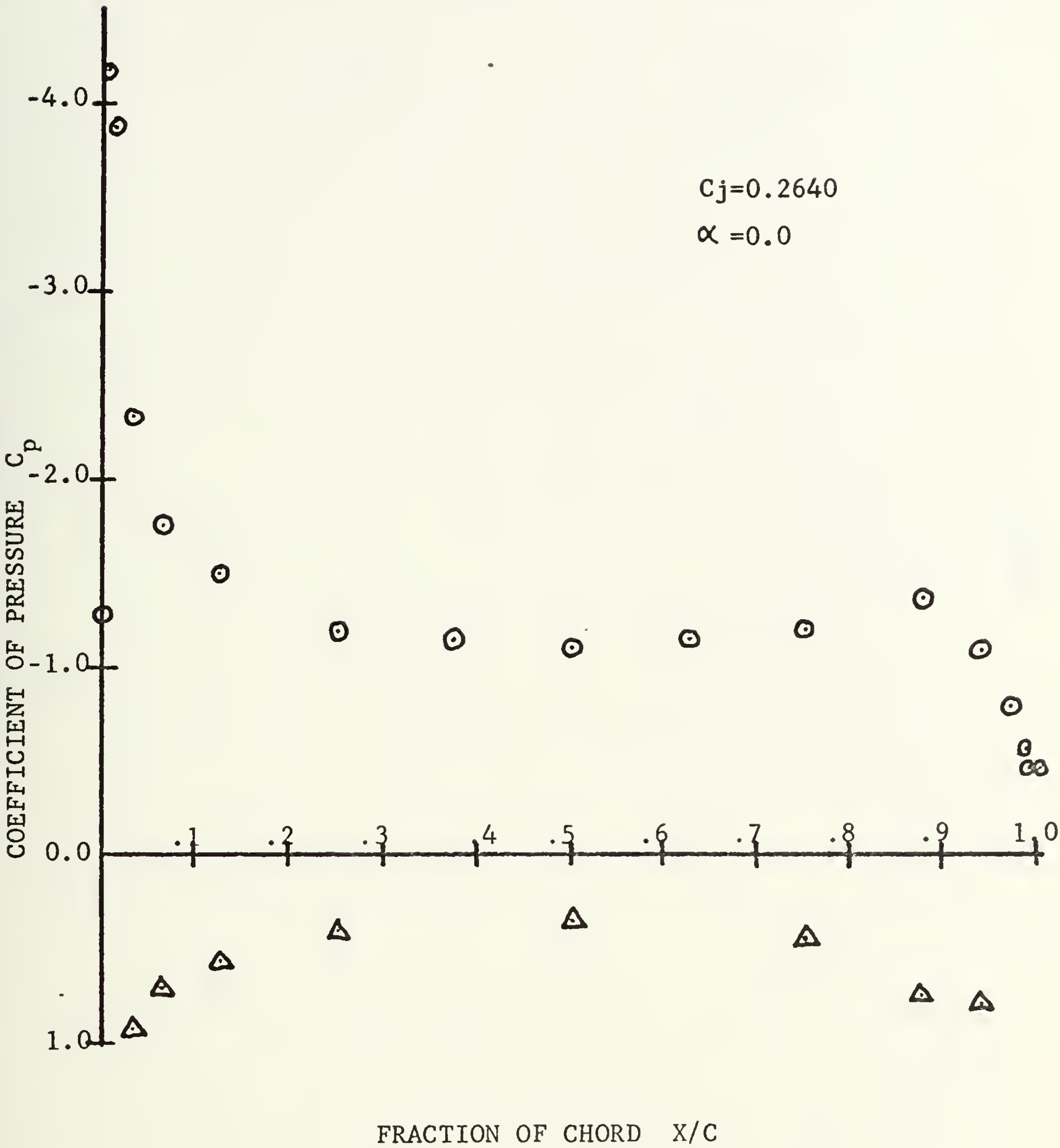
-3.0
-2.0
-1.0
0.0
1.0
Cj=0.1178
α =0.0
.1 .2 .3 .4 .5 .6 .7 .8 .9 1.0
COEFFICIENT OF PRESSURE C_p
-3.0
-2.0
-1.0
0.0
1.0
Cj=0.1427
α =0.0
.1 .2 .3 .4 .5 .6 .7 .8 .9 1.0
FRACTION OF CHORD X/C

FIGURE 11



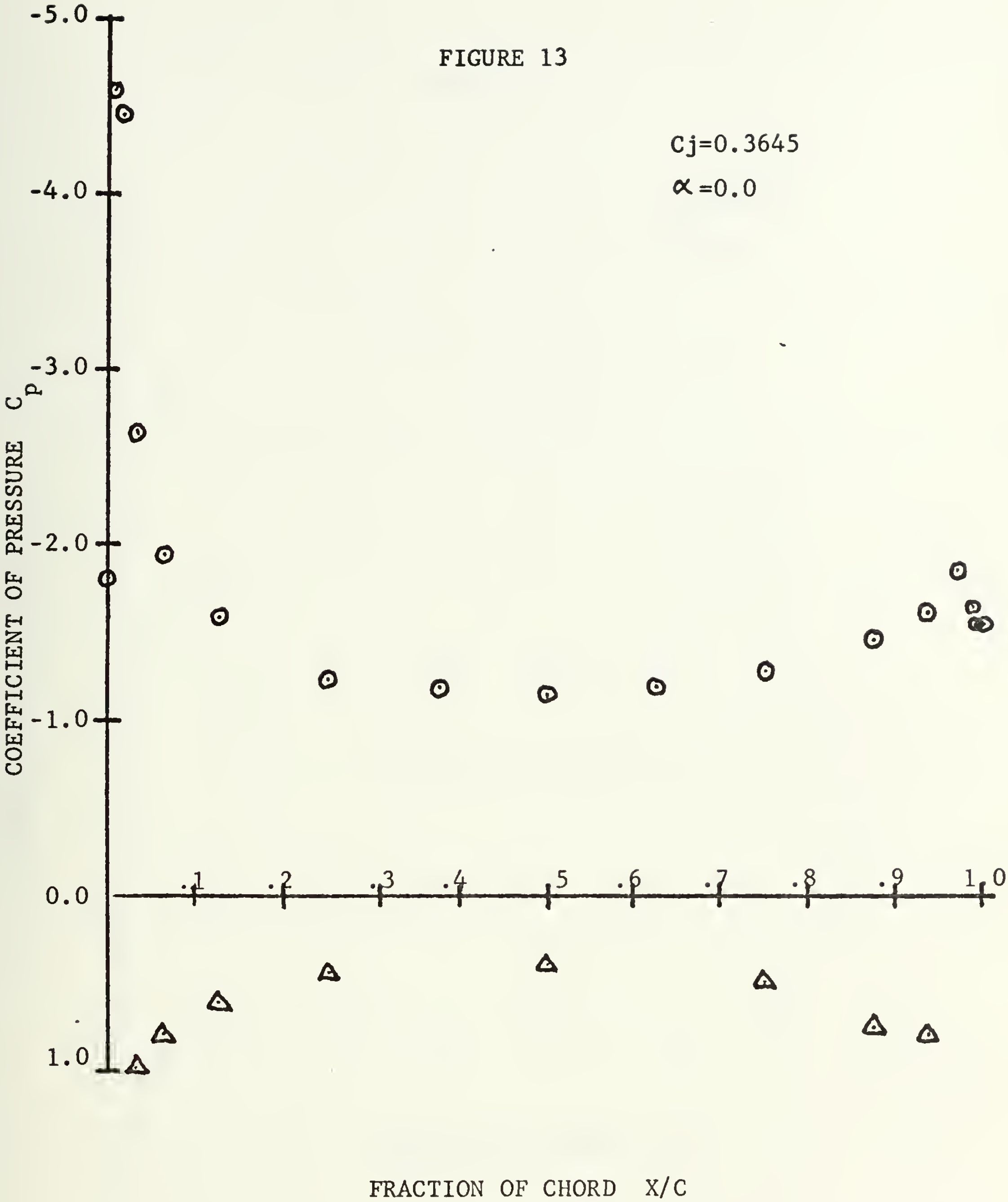
FRACTION OF CHORD X/C

FIGURE 12



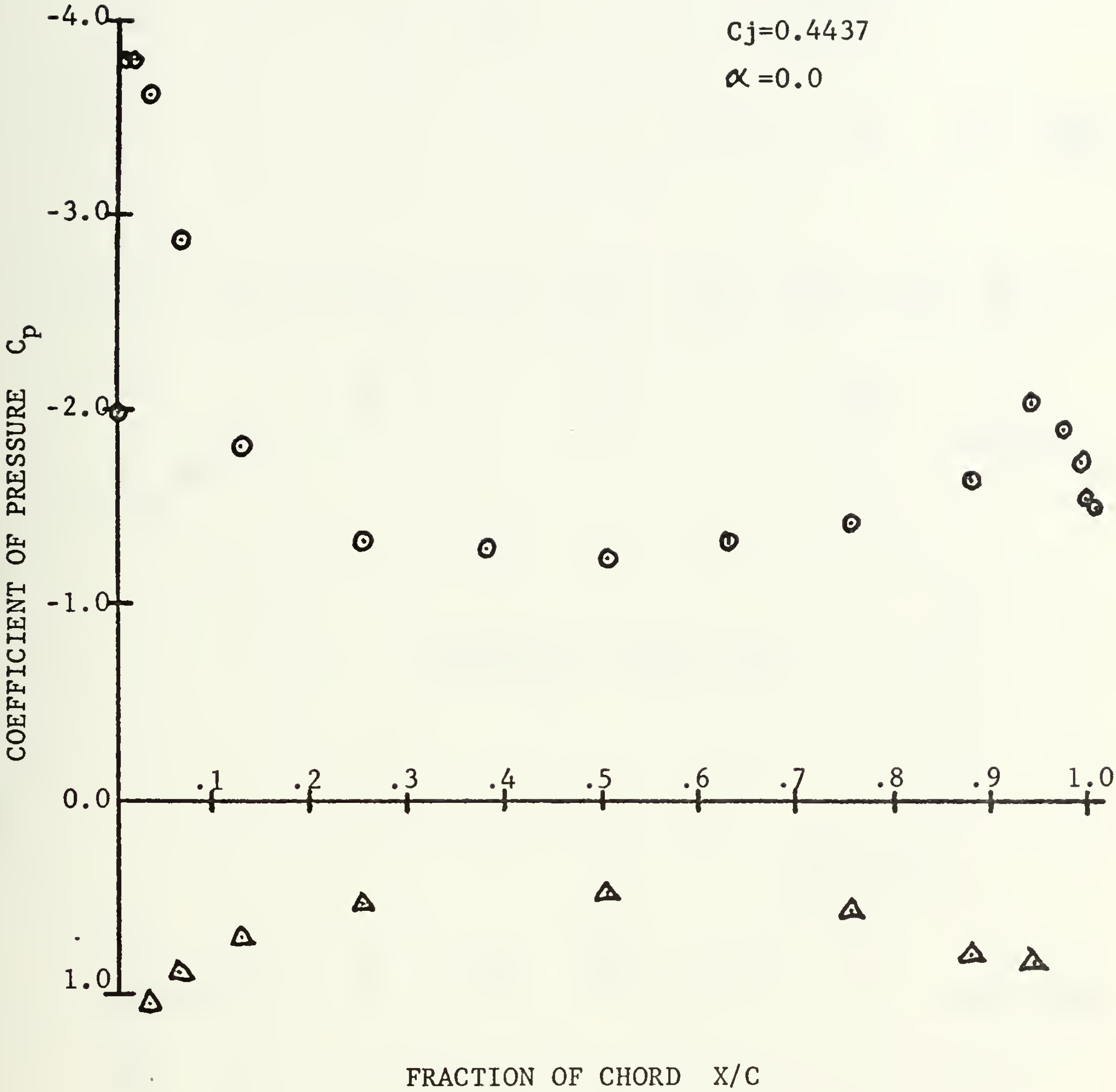
Cj=0.2640
α =0.0
-4.0
-3.0
-2.0
-1.0
0.0
1.0
COEFFICIENT OF PRESSURE C_p
.1
.2
.3
.4
.5
.6
.7
.8
.9
1.0
FRACTION OF CHORD X/C

FIGURE 13



Cj=0.3645
α=0.0
-5.0
-4.0
-3.0
-2.0
-1.0
0.0
1.0
COEFFICIENT OF PRESSURE C_p
.1
.2
.3
.4
.5
.6
.7
.8
.9
1.0
FRACTION OF CHORD X/C

FIGURE 14



Cj=0.4437
α =0.0
-4.0
-3.0
-2.0
-1.0
0.0
1.0
COEFFICIENT OF PRESSURE C_p
.1
.2
.3
.4
.5
.6
.7
.8
.9
1.0
FRACTION OF CHORD X/C

FIGURE 15

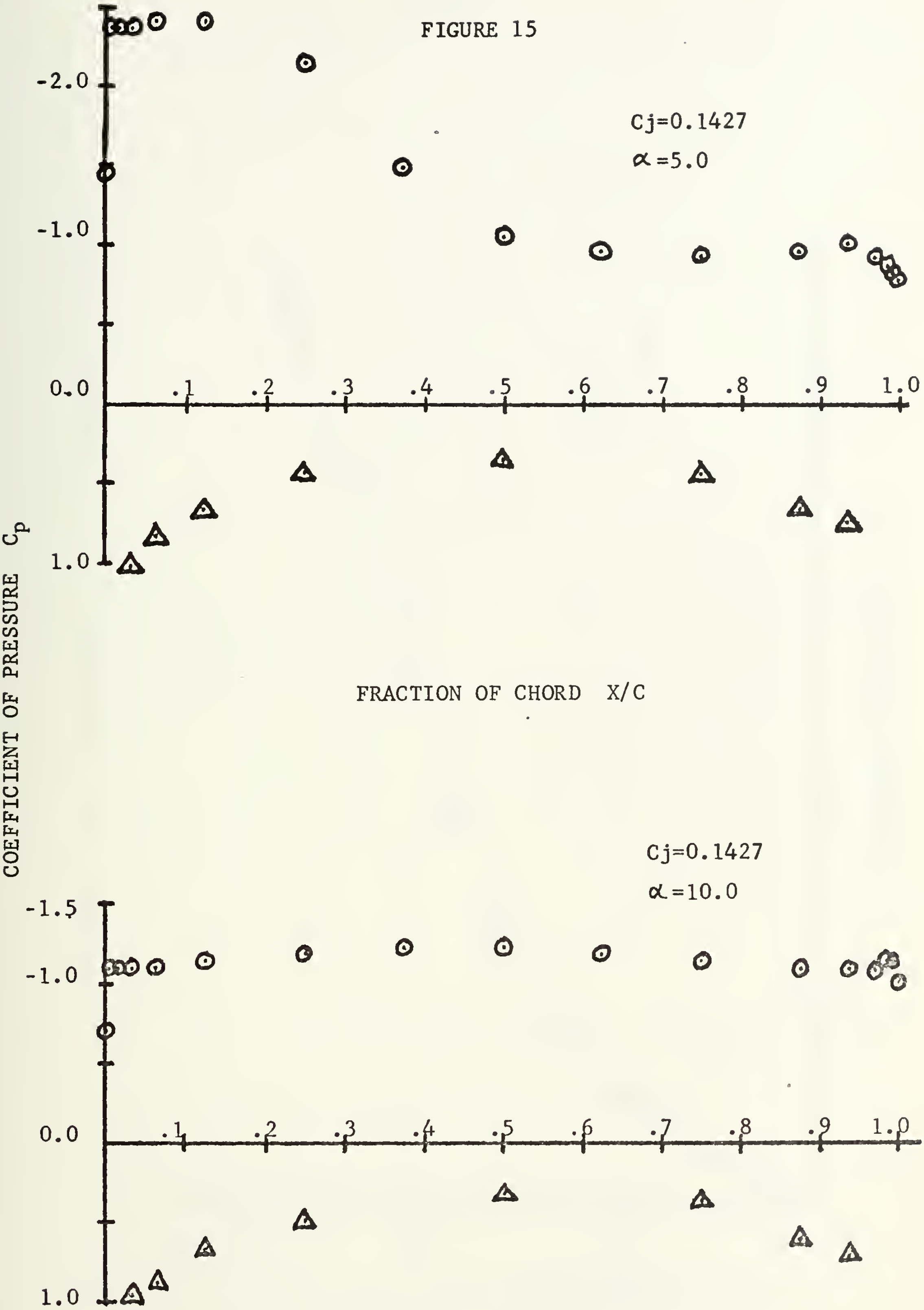

Cj=0.1427
α=5.0
-2.0
-1.0
0.0
1.0
.1 .2 .3 .4 .5 .6 .7 .8 .9 1.0
COEFFICIENT OF PRESSURE C_p
FRACTION OF CHORD X/C
Cj=0.1427
α=10.0
-1.5
-1.0
0.0
1.0
.1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

FIGURE 16

VARIATION OF LIFT COEFFICIENT WITH JET MOMENTUM COEFFICIENT

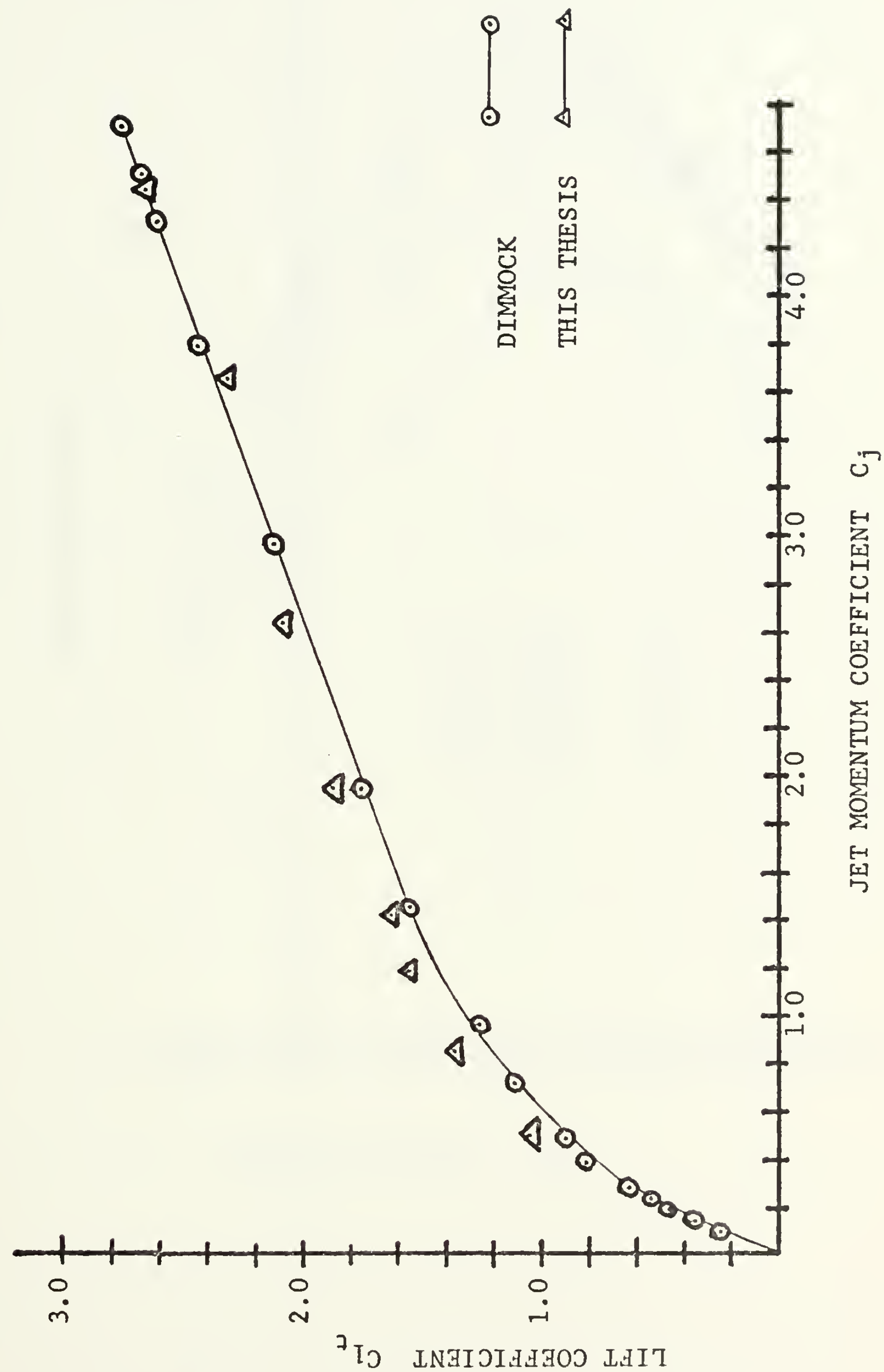


FIGURE 17

VARIATION OF LIFT COEFFICIENT WITH ANGLE OF ATTACK

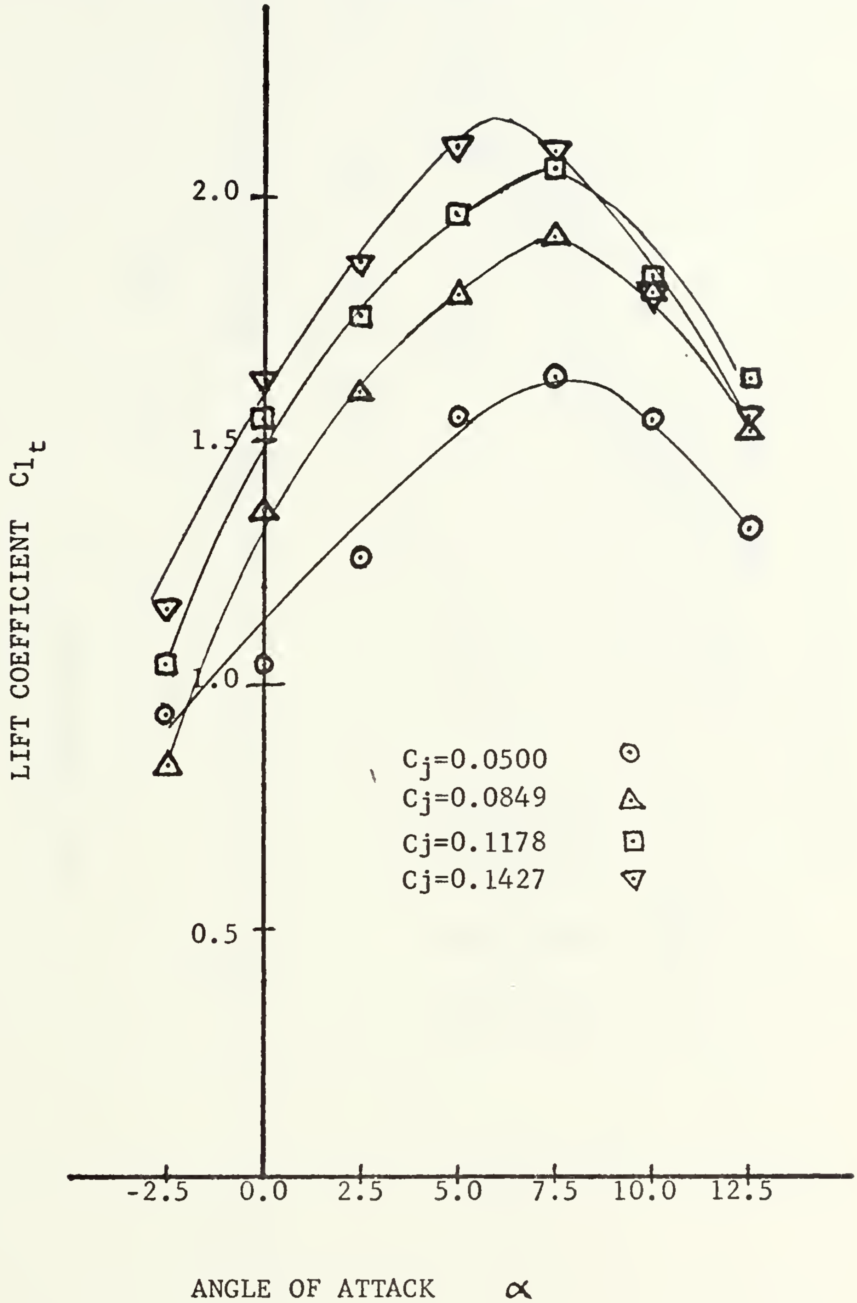


FIGURE 18

VARIATION OF LIFT COEFFICIENT WITH ANGLE OF ATTACK

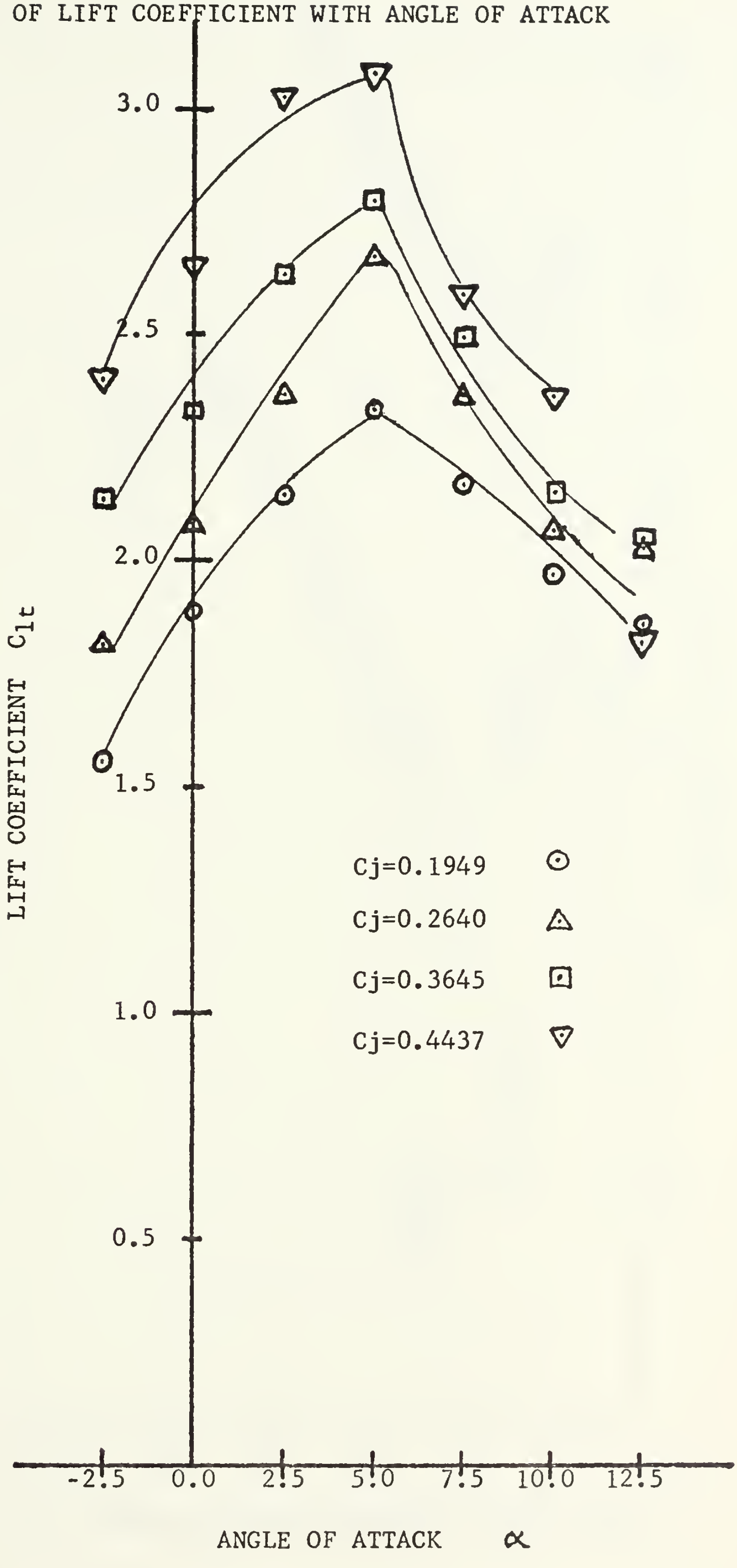


FIGURE 19

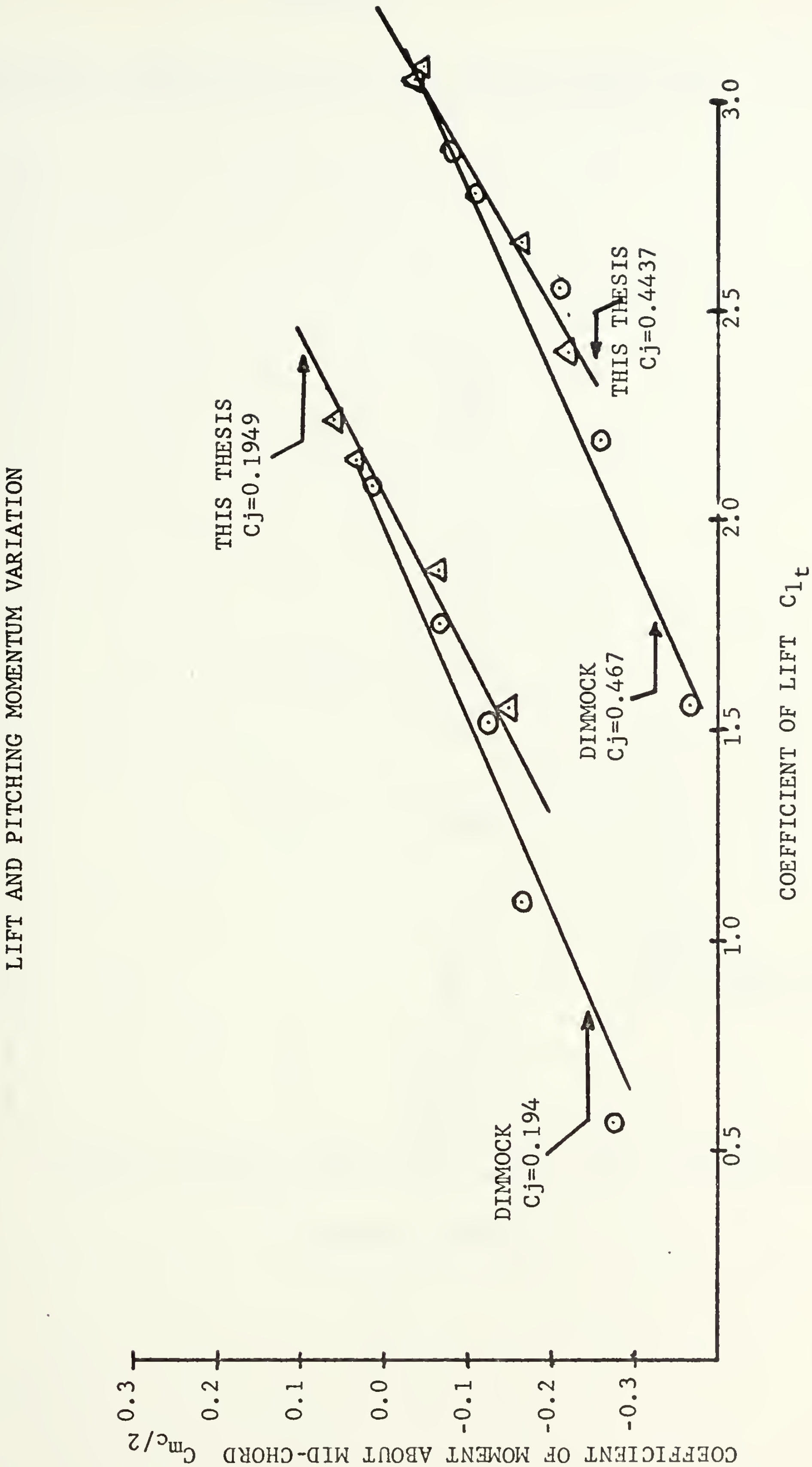

LIFT AND PITCHING MOMENTUM VARIATION
THIS THESIS Cj=0.1949
THIS THESIS Cj=0.4437
DIMMOCK Cj=0.467
DIMMOCK Cj=0.194
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
COEFFICIENT OF MOMENT ABOUT MID-CHORD $C_{m_{c/2}}$
0.5
1.0
1.5
2.0
2.5
3.0
COEFFICIENT OF LIFT C_{l_t}

FIGURE 20

VARIATION OF CENTER OF LIFT WITH JET MOMENTUM COEFFICIENT

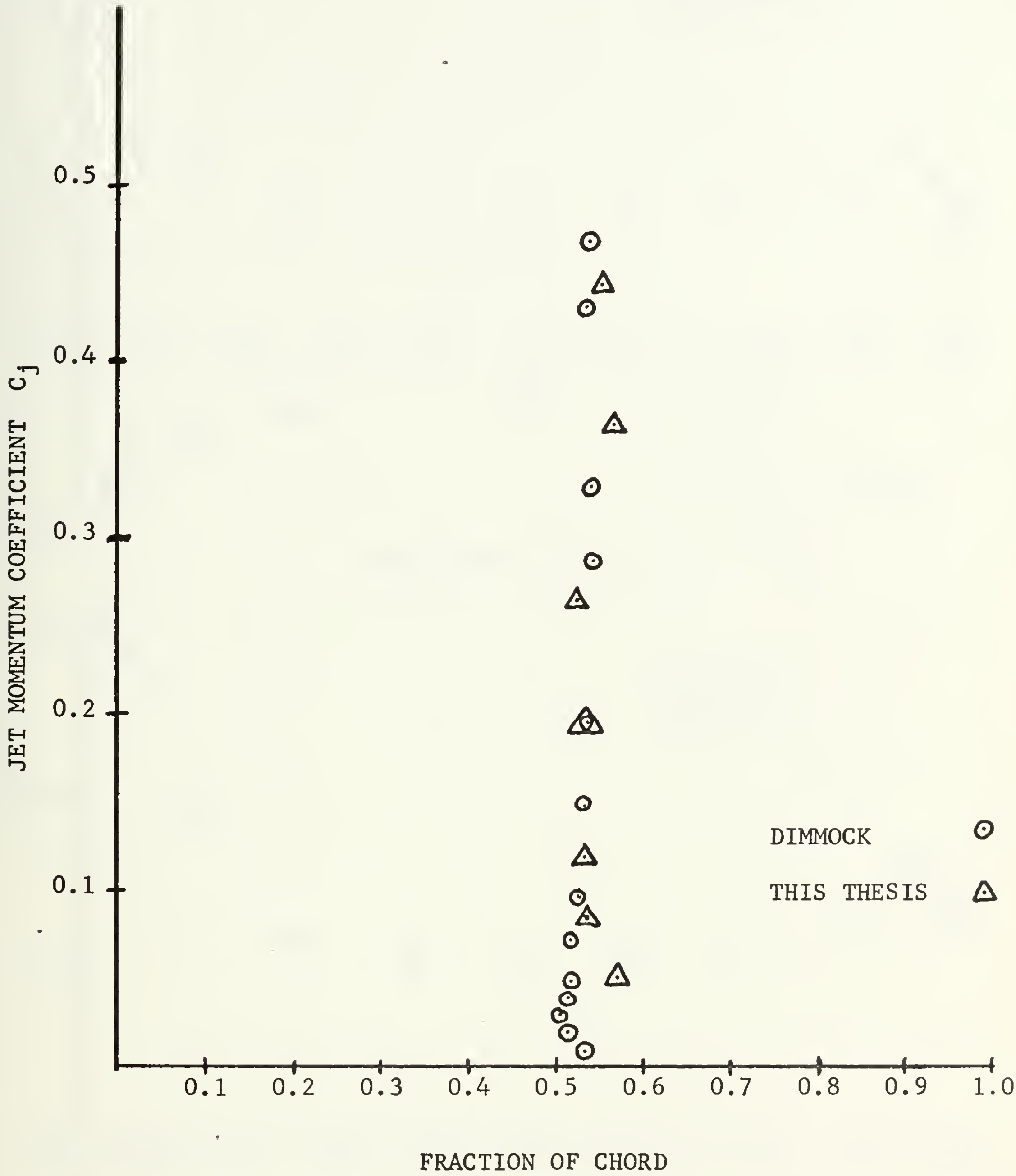


FIGURE 21

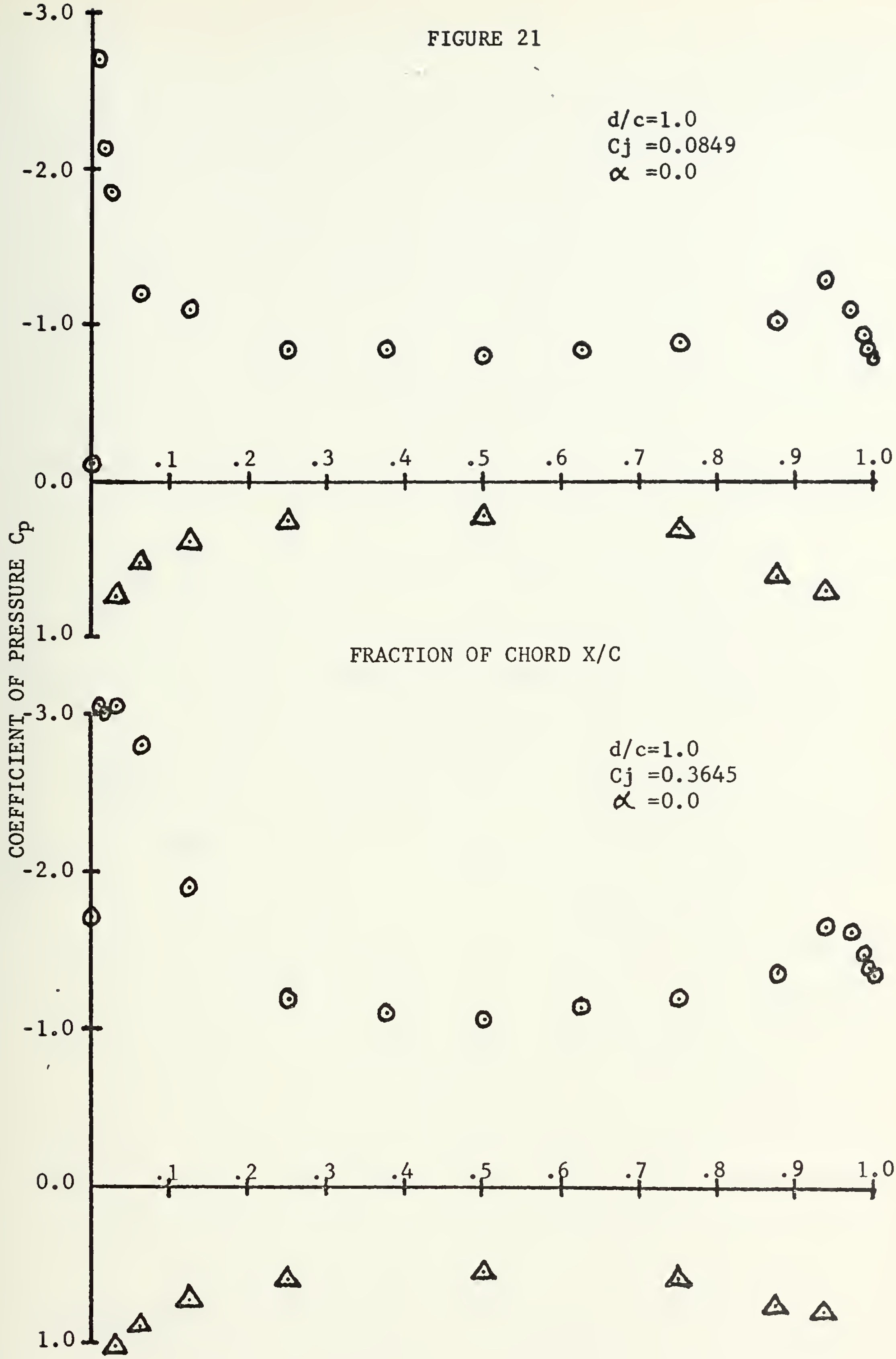
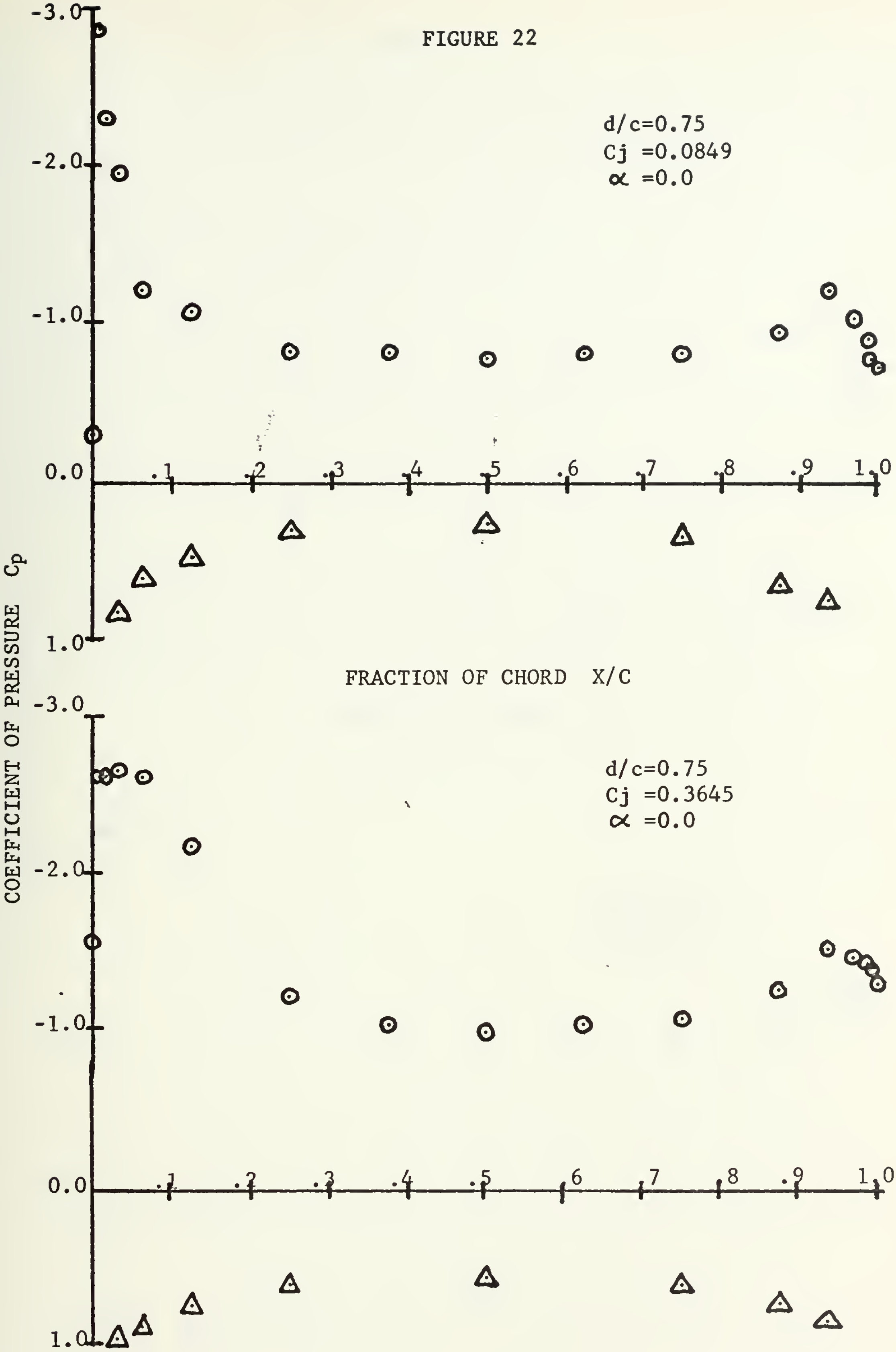
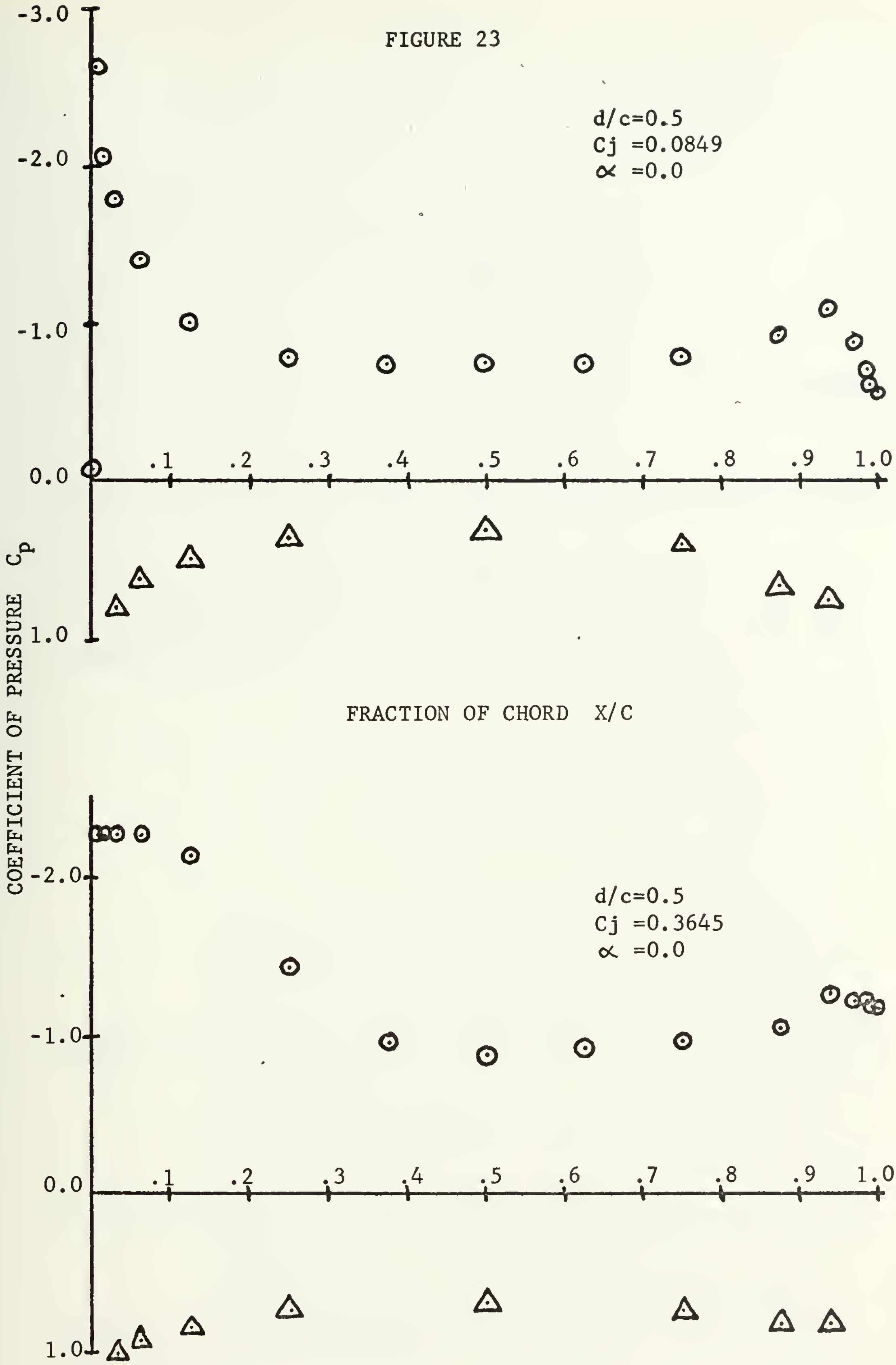

d/c=1.0
Cj =0.0849
α =0.0
d/c=1.0
Cj =0.3645
α =0.0
COEFFICIENT OF PRESSURE Cp
FRACTION OF CHORD X/C
-3.0
-2.0
-1.0
0.0
1.0
.1
.2
.3
.4
.5
.6
.7
.8
.9
1.0

FIGURE 22



d/c=0.75
Cj =0.0849
α =0.0
FRACTION OF CHORD X/C
COEFFICIENT OF PRESSURE Cp
d/c=0.75
Cj =0.3645
α =0.0

FIGURE 23



-3.0
-2.0
-1.0
0.0
1.0
d/c=0.5
Cj =0.0849
α =0.0
.1 .2 .3 .4 .5 .6 .7 .8 .9 1.0
COEFFICIENT OF PRESSURE C_p
FRACTION OF CHORD X/C
-2.0
-1.0
0.0
1.0
d/c=0.5
Cj =0.3645
α =0.0
.1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

FIGURE 24

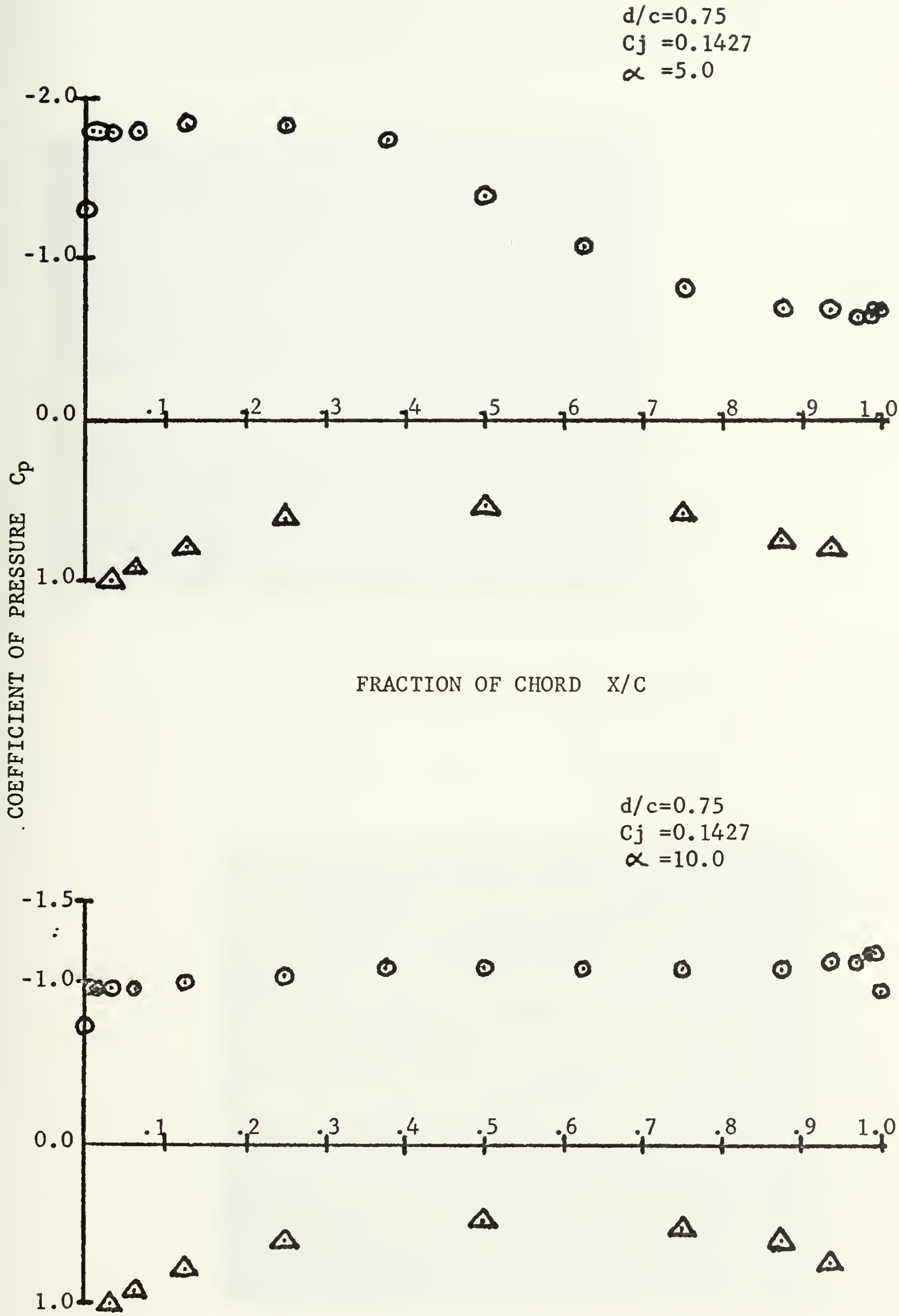
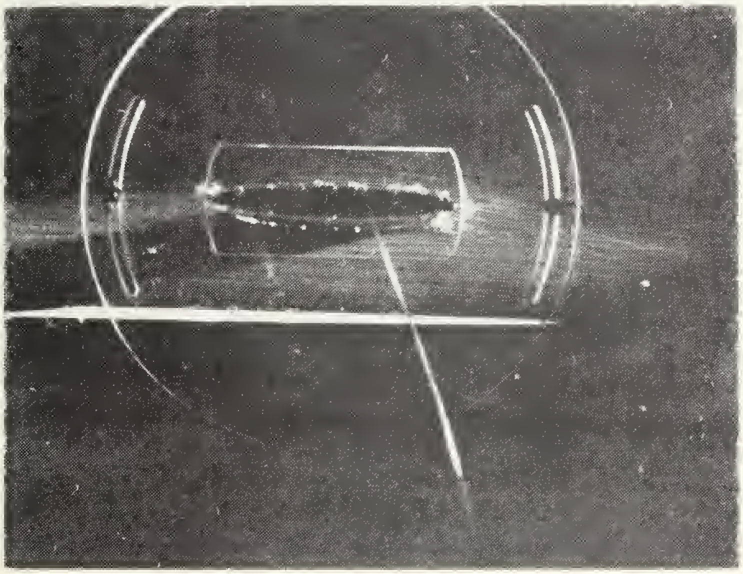

d/c=0.75
Cj =0.1427
α =5.0
-2.0
-1.0
0.0
1.0
.1
.2
.3
.4
.5
.6
.7
.8
.9
1.0
COEFFICIENT OF PRESSURE C_p
FRACTION OF CHORD X/C
d/c=0.75
Cj =0.1427
α =10.0
-1.5
-1.0
0.0
1.0
.1
.2
.3
.4
.5
.6
.7
.8
.9
1.0

FIGURE 25

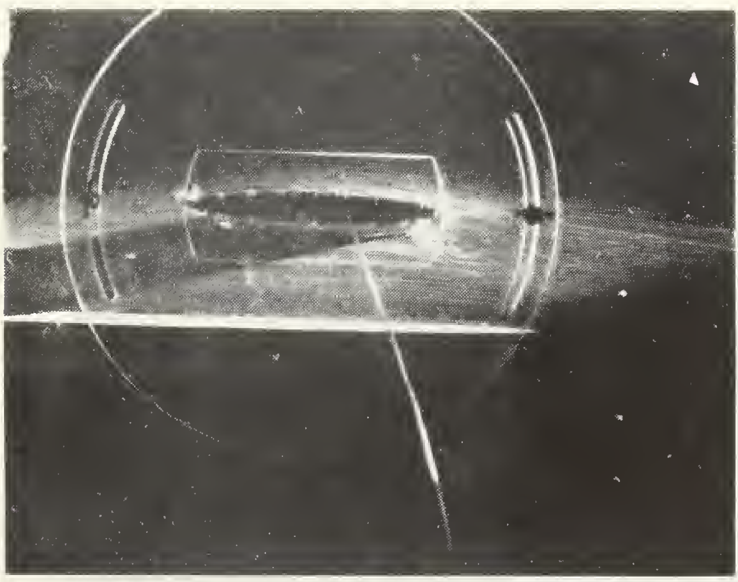
AIRFLOW AS DEPICTED BY HELIUM BUBBLES



d/c = 0.5

Cj = 0.06

α = 0.0



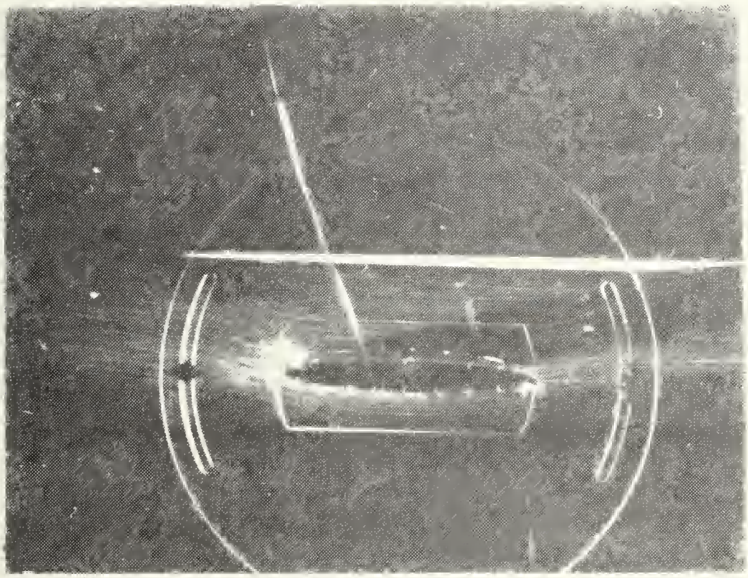
d/c = 0.5

Cj = 0.15

α = 0.0

FIGURE 26

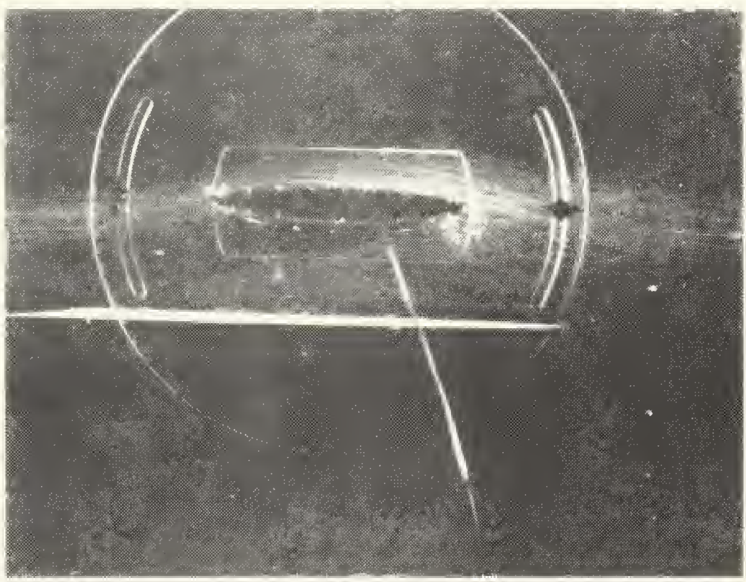
AIRFLOW AS DEPICTED BY HELIUM BUBBLES



$d/c = 0.5$

$Cj = 0.23$

$\alpha = 0.0$



$d/c = 0.5$

$Cj = 0.40$

$\alpha = 0.0$

TABLE 1

AERODYNAMIC COEFFICIENTS AT ZERO INCIDENCE

P_j	C_j	C_{l_t}	C_{m_t}	X_{cl}/C	$C_{m_{c/2}}$	q
4.0	0.0500	1.056	-0.606	0.573	-0.078	11.8314
7.0	0.0849	13.67	-0.731	0.535	-0.047	11.8314
9.2	0.1178	1.556	-0.830	0.534	-0.052	11.7822
11.1	0.1427	1.629	-0.876	0.538	-0.062	11.8314
15.2	0.1949	1.885	-1.007	0.534	-0.065	11.7822
20.0	0.2640	2.080	-1.087	0.523	-0.047	11.7822
25.2	0.3645	2.325	-1.310	0.564	-0.148	11.7779
32.5	0.4437	2.658	-1.490	0.560	-0.161	11.7822

TABLE 2

AERODYNAMIC COEFFICIENTS AT ANGLE OF ATTACK

	α	C_{l_t}	C_{m_t}	X_{cl}/C	$C_{m_{c/2}}$
	-2.5	0.945	-0.522	0.552	-0.049
	0.0	1.056	-0.606	0.573	-0.078
	2.5	1.270	-0.588	0.463	0.048
P_j = 4.0	5.0	1.555	-0.650	0.418	0.128
	7.5	1.640	-0.648	0.395	0.173
	10.0	1.550	-0.710	0.458	0.066
	12.5	1.325	-0.642	0.484	0.021
	-2.5	0.884	-0.559	0.632	-0.117
	0.0	1.367	-0.731	0.535	-0.047
	2.5	1.605	-0.741	0.462	0.062
P_j = 7.0	5.0	1.805	-0.795	0.440	0.108
	7.5	1.925	-0.841	0.437	0.122
	10.0	1.815	-0.871	0.480	0.037
	12.5	1.525	-0.769	0.504	-0.006
	-2.5	1.048	-0.544	0.519	-0.020
	0.0	1.556	-0.830	0.534	-0.052
	2.5	1.763	-0.826	0.467	0.055
P_j = 9.2	5.0	1.973	-0.856	0.434	0.130
	7.5	2.063	-0.938	0.455	0.094
	10.0	1.838	-0.938	0.510	-0.019
	12.5	1.633	-0.868	0.532	-0.052
	-2.5	1.163	-0.718	0.618	-0.137
	0.0	1.629	-0.876	0.538	-0.062
	2.5	1.873	-0.882	0.471	0.055
P_j = 11.1	5.0	2.111	-0.946	0.448	0.110
	7.5	2.103	-0.966	0.459	0.086
	10.0	1.811	-0.950	0.524	-0.044
	12.5	1.557	-0.858	0.551	-0.079

TABLE 3

AERODYNAMIC COEFFICIENTS AT ANGLE OF ATTACK

	α	C_{l_t}	C_{m_t}	X_{cl}/C	$C_{m_{c/2}}$
	-2.5	1.555	-0.927	0.596	-0.150
	0.0	1.885	-1.007	0.534	-0.065
	2.5	2.145	-1.033	0.482	0.039
P_j = 15.2	5.0	2.235	-1.057	0.473	0.060
	7.5	2.171	-1.063	0.490	0.022
	10.0	1.971	-1.073	0.545	-0.088
	12.5	1.859	-1.029	0.554	-0.100
	-2.5	1.814	-1.073	0.591	-0.166
	0.0	2.080	-1.087	0.523	-0.047
	2.5	2.372	-1.163	0.490	0.023
P_j = 20.0	5.0	2.676	-1.303	0.487	0.035
	7.5	2.370	-1.243	0.524	-0.058
	10.0	2.070	-1.161	0.561	-0.126
	12.5	2.038	-1.145	0.562	-0.126
	-2.5	2.143	-1.284	0.599	-0.213
	0.0	2.325	-1.310	0.564	-0.148
	2.5	2.639	-1.340	0.508	-0.021
P_j = 25.2	5.0	2.801	-1.410	0.504	-0.010
	7.5	2.495	-1.380	0.553	-0.133
	10.0	2.155	-1.256	0.583	-0.179
	12.5	2.045	-1.190	0.582	-0.168
	-2.5	2.404	-1.424	0.592	-0.221
	0.0	2.658	-1.490	0.560	-0.161
	2.5	3.032	-1.552	0.512	-0.036
P_j = 32.5	5.0	3.082	-1.586	0.514	-0.044
	7.5	2.594	-1.502	0.579	-0.204
	10.0	2.366	-1.512	0.639	-0.328
	12.5	1.824	-1.110	0.608	-0.198

TABLE 4

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 4.0 IN. HG.
QPSF= 11.8314 LB. PER SQUARE FOOT
CJ= .0686

				ANGLE OF ATTACK			
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	1.0083	0.5699	-0.4822	-1.4028	-1.0521	-0.7014	-0.3945
0.0078	-0.0438	-1.7097	-3.2879	-3.3317	-1.9727	-1.3590	-0.8768
0.0156	-0.3069	-1.5344	-2.7180	-3.2879	-1.9727	-1.3590	-0.8768
0.0313	-0.3507	-1.1398	-2.1481	-3.2441	-1.9727	-1.3590	-0.8768
0.0625	-0.4822	-1.0083	-1.4028	-2.4111	-1.9727	-1.3590	-0.8768
0.1250	-0.5699	-0.9206	-1.1836	-1.5782	-2.0166	-1.4028	-0.8768
0.2500	-0.5261	-0.7014	-0.9206	-1.0960	-1.8851	-1.4467	-0.9206
0.3760	-0.5699	-0.7014	-0.8768	-0.9644	-1.4028	-1.4028	-0.9644
0.5000	-0.6137	-0.7014	-0.7891	-0.8768	-0.9644	-1.2275	-1.0083
0.6250	-0.6576	-0.7453	-0.8329	-0.8768	-0.7453	-1.0521	-1.0083
0.7500	-0.7014	-0.7891	-0.8329	-0.8329	-0.6576	-0.9206	-1.0083
0.8750	-0.8329	-0.9206	-0.9206	-0.8768	-0.6137	-0.7891	-1.0083
0.9375	-0.9206	-1.1836	-1.0521	-0.9644	-0.6137	-0.7453	-0.9644
0.9700	-0.8768	-1.0521	-0.8768	-0.7891	-0.5699	-0.7014	-0.9206
0.9840	-0.9206	-0.9206	-0.7014	-0.6576	-0.5699	-0.7014	-0.8768
0.9925	-0.9206	-0.7453	-0.6137	-0.6137	-0.5261	-0.7014	-0.8768
1.0000	-0.9644	-0.7014	-0.5699	-0.6137	-0.5261	-0.6576	-0.7453
0.0313	-0.0877	0.4822	0.7453	0.9206	0.9644	0.9206	0.9206
0.0625	-0.1754	0.3069	0.5261	0.7014	0.7891	0.7453	0.7891
0.1250	-0.1315	0.1754	0.3945	0.5261	0.6137	0.6137	0.5699
0.2500	-0.2192	0.0438	0.1754	0.3069	0.3945	0.3507	0.3507
0.5000	-0.1754	0.0	0.0877	0.1315	0.2192	0.1754	0.1315
0.7500	-0.0438	0.0877	0.1754	0.2192	0.3069	0.2192	0.1754
0.8750	0.3069	0.4384	0.4384	0.3945	0.3945	0.2630	0.2192
0.9375	0.4822	0.5699	0.6137	0.5699	0.6137	0.4384	0.3069

TABLE 5

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 7.0 IN. HG.
QPSF= 11.8314 LB. PER SQUARE FOOT
CJ= .1163

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.9644	0.1754	-1.1398	-1.3590	-1.1836	-0.7453	-0.4384
0.0078	-0.4822	-2.4988	-3.8578	-2.5865	-1.9289	-1.3152	-0.8768
0.0156	-0.6576	-2.0604	-3.6386	-2.5865	-1.9289	-1.3152	-0.8768
0.0313	-0.5699	-1.6220	-2.4550	-2.6303	-1.9289	-1.3152	-0.8768
0.0625	-0.6137	-1.2275	-1.6659	-2.6303	-1.9289	-1.3152	-0.8768
0.1250	-0.7014	-1.1398	-1.4028	-2.3673	-1.9727	-1.3590	-0.8768
0.2500	-0.6137	-0.8768	-1.0521	-1.3590	-1.9727	-1.4028	-0.8768
0.3760	-0.6576	-0.8768	-1.0083	-1.0521	-1.7097	-1.4028	-C.9206
0.5000	-0.7014	-0.8768	-0.9206	-0.9206	-1.2713	-1.3590	-0.9644
0.6250	-0.7453	-0.9206	-0.9206	-0.9206	-0.9644	-1.2275	-1.0083
0.7500	-0.7891	-0.9644	-0.9206	-0.9206	-0.7891	-1.0960	-1.0521
0.8750	-0.8768	-1.1398	-1.0083	-0.9644	-0.7014	-0.9644	-1.0521
0.9375	-0.9644	-1.4028	-1.1398	-1.0083	-0.7C14	-0.9644	-1.0521
C.9700	-0.9644	-1.1836	-0.8768	-0.8768	-0.6576	-0.9206	-1.0083
0.9840	-0.9644	-0.9644	-0.7014	-0.7453	-0.6576	-0.9206	-1.0083
0.9925	-0.9644	-0.8329	-0.6576	-0.7014	-0.6576	-0.9206	-0.9644
1.0000	-0.9644	-0.7891	-0.6576	-0.6576	-0.6576	-0.7891	-0.8768
0.0313	0.0877	0.6137	0.8768	0.9644	1.0521	1.0521	1.C521
0.0625	0.C	0.3945	0.6576	0.7891	0.8329	0.8768	0.8768
0.1250	-0.0438	0.2630	0.4822	0.6137	0.7C14	0.7014	0.7014
0.2500	-0.1315	0.0877	0.2630	0.3945	0.4384	0.4384	0.4822
0.5000	-0.0877	0.0877	0.1754	0.2630	0.3069	0.2630	C.2630
0.7500	0.0877	0.1315	0.2630	0.3069	0.3945	C.3507	0.3069
0.8750	0.4384	0.5261	0.5699	0.5699	0.6137	0.4822	0.3945
0.9375	0.5699	0.6576	0.7014	0.7014	0.7453	0.6576	0.5699

TABLE 6

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 9.2 IN. HG.
QPSF= 11.7822 LB. PER SQUARE FOOT
CJ= .1502

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.8804	-0.0440	-1.4087	-1.3647	-1.1886	-0.6603	-0.5283
0.0078	-0.8804	-2.8174	-3.7859	-2.3331	-1.8489	-1.2326	-0.9245
0.0156	-0.9685	-2.2891	-3.6978	-2.3331	-1.8489	-1.2326	-0.9245
0.0313	-0.7924	-1.9370	-2.9054	-2.3772	-1.8489	-1.2326	-0.9245
0.0625	-0.7924	-1.3207	-1.8049	-2.4212	-1.8489	-1.2326	-0.9245
0.1250	-0.8364	-1.2326	-1.4527	-2.3772	-1.8929	-1.2766	-0.9245
0.2500	-0.7043	-0.9685	-1.1005	-1.8929	-1.9370	-1.3207	-0.9685
0.3760	-0.7484	-0.9245	-1.0125	-1.2326	-1.7609	-1.3647	-1.0125
0.5000	-0.7484	-0.9245	-0.9685	-0.9685	-1.4527	-1.3207	-1.0125
0.6250	-0.7924	-0.9685	-0.9685	-0.9245	-1.1446	-1.2326	-1.0565
0.7500	-0.8364	-1.0125	-0.9685	-0.9245	-0.9245	-1.1446	-1.1005
0.8750	-0.9245	-1.1886	-1.0565	-0.9245	-0.7924	-1.0565	-1.1446
0.9375	-0.9685	-1.4527	-1.1446	-1.0125	-0.7484	-1.0125	-1.1446
0.9700	-0.9685	-1.2766	-0.8804	-0.8804	-0.7484	-1.0565	-1.1446
0.9840	-0.9685	-1.0565	-0.7484	-0.8364	-0.7484	-1.0565	-1.1446
0.9925	-0.9685	-0.9245	-0.7043	-0.7924	-0.7484	-1.0565	-1.1446
1.0000	-0.9685	-0.8804	-0.7043	-0.7484	-0.7484	-0.9245	-0.9685
0.0313	0.2641	0.7043	0.9245	0.9685	1.0125	1.0125	1.0125
0.0625	0.0880	0.4842	0.7043	0.7924	0.8804	0.8364	0.8804
0.1250	0.0440	0.3522	0.5283	0.6163	0.7043	0.7043	0.7043
0.2500	-0.0440	0.1761	0.3522	0.4402	0.4842	0.4842	0.4842
0.5000	0.0	0.1321	0.2641	0.3082	0.3522	0.3082	0.3082
0.7500	0.1761	0.2641	0.3522	0.3962	0.4402	0.3962	0.3522
0.8750	0.4842	0.6163	0.6163	0.6603	0.7043	0.6163	0.5723
0.9375	0.6163	0.7043	0.7043	0.7484	0.7484	0.7484	0.7043

TABLE 7

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 11.1 IN. HG.
QPSF= 11.8314 LB. PER SQUARE FOOT
CJ= .1773

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.8329	-0.3507	-1.5344	-1.4467	-1.1836	-0.7014	-0.5261
0.0078	-1.0960	-3.1564	-3.9455	-2.3673	-1.8412	-1.0960	-0.7891
0.0156	-1.0960	-2.5865	-3.9016	-2.3673	-1.8412	-1.0960	-0.7891
0.0313	-0.8768	-2.0166	-3.2441	-2.3673	-1.8412	-1.0960	-0.7891
0.0625	-0.8329	-1.4028	-2.0166	-2.4111	-1.8412	-1.0960	-0.7891
0.1250	-0.8329	-1.2713	-1.5344	-2.4111	-1.8851	-1.1398	-0.8329
0.2500	-0.7014	-0.9644	-1.1398	-2.1481	-1.9289	-1.1836	-0.8329
0.3750	-0.7453	-0.9644	-1.0960	-1.4905	-1.7535	-1.2275	-0.8768
0.5000	-0.7891	-0.9206	-1.0083	-1.0521	-1.4467	-1.2275	-0.9206
0.6250	-0.8329	-0.9644	-1.0083	-0.9644	-1.1398	-1.1836	-0.9644
0.7500	-0.8768	-1.0521	-1.0083	-0.9206	-0.9206	-1.1398	-0.9644
0.8750	-0.9644	-1.2275	-1.0960	-0.9644	-0.7891	-1.0960	-1.0083
0.9375	-1.0083	-1.4905	-1.2275	-1.0083	-0.7453	-1.0960	-1.0521
0.9700	-1.0083	-1.3152	-0.9644	-0.9206	-0.7453	-1.0960	-1.0521
0.9840	-1.0083	-1.0960	-0.7891	-0.8768	-0.7453	-1.1398	-1.0521
0.9925	-1.0083	-0.9644	-0.7453	-0.8329	-0.7453	-1.1398	-1.0521
1.0000	-1.0083	-0.9206	-0.7453	-0.7891	-0.7453	-1.0083	-0.9206
0.0313	0.3507	0.7453	0.9644	1.0083	1.0083	0.9644	1.0083
0.0625	0.1754	0.5261	0.7453	0.8329	0.8768	0.8329	0.8768
0.1250	0.1315	0.3945	0.5699	0.6576	0.7014	0.6576	0.7014
0.2500	0.0	0.2192	0.3945	0.4384	0.4822	0.4822	0.5261
0.5000	0.0438	0.1754	0.2630	0.3507	0.3507	0.3069	0.3507
0.7500	0.2630	0.2630	0.3507	0.4384	0.4384	0.3507	0.3945
0.8750	0.5699	0.6137	0.6576	0.6576	0.7014	0.6137	0.6137
0.9375	0.6576	0.7014	0.7453	0.7453	0.7453	0.7014	0.7014

TABLE 8

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 15.2 IN. HG.
QPSF= 11.7822 LB. PER SQUARE FOOT
CJ= .2349

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.3522	-0.7043	-1.6288	-1.5848	-1.1886	-0.7043	-0.6603
0.0078	-0.1761	-3.6538	-3.1696	-2.3331	-1.6728	-1.1005	-0.9245
0.0156	-1.6728	-3.1696	-3.1696	-2.3331	-1.6728	-1.1005	-0.9245
0.0313	-1.2766	-2.1130	-3.1696	-2.3331	-1.6728	-1.1005	-0.9245
0.0625	-1.1005	-1.5408	-2.9054	-2.3772	-1.6728	-1.1005	-0.9245
0.1250	-1.0565	-1.3647	-1.9810	-2.3772	-1.7168	-1.1005	-0.9245
0.2500	-0.8364	-1.0565	-1.2326	-2.2891	-1.7609	-1.1446	-0.9245
0.3760	-0.8804	-1.0565	-1.1886	-1.7609	-1.6728	-1.1886	-1.0125
0.5000	-0.9245	-1.0125	-1.1005	-1.2766	-1.4967	-1.1886	-1.0565
0.6250	-0.9685	-1.0565	-1.1005	-1.0125	-1.2766	-1.1886	-1.1005
0.7500	-1.0565	-1.1005	-1.1005	-0.9685	-1.0565	-1.1886	-1.1005
0.8750	-1.2766	-1.2766	-1.1886	-0.9685	-0.9245	-1.1886	-1.1446
0.9375	-1.5848	-1.4967	-1.3647	-1.0125	-0.8804	-1.2326	-1.1886
0.9700	-1.4087	-1.2326	-1.1886	-0.9685	-0.8804	-1.2766	-1.1886
0.9840	-1.1886	-1.0125	-1.0125	-0.9245	-0.9245	-1.3207	-1.2326
0.9925	-1.0565	-0.9245	-0.9245	-0.8804	-0.9685	-1.3647	-1.2326
1.0000	-1.0125	-0.8804	-0.9245	-0.8804	-0.8804	-1.1446	-1.0565
0.0313	0.5723	0.8804	0.9685	1.0565	0.9685	1.0125	1.0125
0.0625	0.3962	0.6603	0.7924	0.9245	0.8804	0.8804	0.8804
0.1250	0.2641	0.4842	0.6163	0.7484	0.7043	0.7484	0.7484
0.2500	0.1761	0.3082	0.4402	0.5283	0.5283	0.5283	0.5283
0.5000	0.1761	0.2641	0.3522	0.4402	0.3962	0.3962	0.3962
0.7500	0.3962	0.3962	0.4402	0.5283	0.4842	0.4842	0.4842
0.8750	0.6163	0.7043	0.7043	0.7484	0.7043	0.7043	0.7043
0.9375	0.7043	0.7924	0.7924	0.8364	0.7484	0.7924	0.7924

TABLE 9

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 20.0 IN. HG.
CPSF= 11.7822 LB. PER SQUARE FOOT
CJ= .2971

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.0440	-1.2766	-1.6288	-1.8489	-1.1886	-0.7484	-0.7043
0.0078	-2.5533	-4.1821	-2.7734	-2.4652	-1.5848	-1.0565	-0.9685
0.0156	-2.1130	-3.8739	-2.8174	-2.4652	-1.5848	-1.0565	-0.9685
0.0313	-1.6728	-2.3331	-2.8614	-2.4652	-1.5848	-1.0565	-0.9685
0.0625	-1.2326	-1.7609	-2.7734	-2.5092	-1.5848	-1.0565	-0.9685
0.1250	-1.1446	-1.4967	-2.5973	-2.5092	-1.6288	-1.0565	-1.0125
0.2500	-0.9245	-1.1886	-1.5408	-2.5092	-1.7168	-1.1005	-1.0125
0.3760	-0.9685	-1.1446	-1.1886	-2.2451	-1.7168	-1.1446	-1.0565
0.5000	-0.9685	-1.1005	-1.1005	-1.6728	-1.5848	-1.1886	-1.1005
0.6250	-1.0565	-1.1446	-1.1446	-1.2766	-1.4087	-1.2326	-1.1005
0.7500	-1.1446	-1.1886	-1.1446	-1.1446	-1.2326	-1.2326	-1.1446
0.8750	-1.3647	-1.3647	-1.2766	-1.1005	-1.1005	-1.2326	-1.1886
0.9375	-1.7168	-1.5848	-1.4967	-1.1005	-1.1005	-1.2766	-1.2326
0.9700	-1.4967	-1.2766	-1.3647	-1.1005	-1.1005	-1.3207	-1.2326
0.9840	-1.2326	-1.0565	-1.2766	-1.0565	-1.1446	-1.4087	-1.2766
0.9925	-1.1005	-0.9685	-1.1886	-1.0565	-1.1886	-1.4527	-1.3207
1.0000	-1.0565	-0.9685	-1.1446	-1.0125	-1.1005	-1.2766	-1.1446
0.0313	0.6603	0.9245	1.0125	1.1005	1.0125	1.0565	1.1005
0.0625	0.4402	0.7043	0.8364	0.9685	0.9245	0.9245	0.9685
0.1250	0.3522	0.5723	0.7043	0.7924	0.7484	0.7924	0.8364
0.2500	0.2201	0.3962	0.4842	0.5723	0.5723	0.5723	0.6603
0.5000	0.2201	0.3522	0.4402	0.4842	0.4842	0.4402	0.4842
0.7500	0.4402	0.4402	0.4842	0.5283	0.5283	0.4842	0.5723
0.8750	0.6603	0.7484	0.7484	0.7924	0.7484	0.7924	0.7924
0.9375	0.7043	0.7924	0.7924	0.8364	0.7924	0.8364	0.8364

TABLE 10

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 25.2 IN. HG.
QPSF= 11.7779 LB. PER SQUARE FOOT
CJ= .3599

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	-0.2202	-1.8055	-1.7615	-1.8496	-1.1450	-0.7927	-0.7046
0.0078	-3.1267	-4.5799	-2.6863	-2.2900	-1.4973	-1.0129	-0.8367
0.0156	-2.5542	-4.4478	-2.6863	-2.2900	-1.4973	-1.0129	-0.8367
0.0313	-1.8496	-2.6423	-2.6863	-2.2900	-1.4973	-1.0129	-0.8367
0.0625	-1.4092	-1.9377	-2.7303	-2.2900	-1.4973	-1.0129	-0.8367
0.1250	-1.3211	-1.5854	-2.6863	-2.3340	-1.5413	-1.0129	-0.8367
0.2500	-1.0569	-1.2331	-2.1138	-2.3780	-1.6294	-1.0569	-0.8808
0.3760	-1.1009	-1.1890	-1.3652	-2.2459	-1.6294	-1.0569	-0.8808
0.5000	-1.1009	-1.1450	-1.1450	-1.8496	-1.5854	-1.1009	-0.9248
0.6250	-1.1890	-1.1890	-1.1890	-1.4092	-1.4532	-1.1450	-0.9248
0.7500	-1.2771	-1.2771	-1.1890	-1.1450	-1.2771	-1.1890	-0.9688
0.8750	-1.5413	-1.4532	-1.3211	-1.0129	-1.1890	-1.2331	-1.0129
0.9375	-1.8936	-2.1138	-1.5413	-1.0129	-1.1890	-1.3211	-1.0129
0.9700	-1.6294	-1.8496	-1.4973	-0.9688	-1.2331	-1.3652	-1.0569
0.9840	-1.3652	-1.6294	-1.4532	-1.0129	-1.2771	-1.4092	-1.1009
0.9925	-1.2331	-1.5413	-1.3652	-1.0129	-1.3652	-1.4973	-1.1009
1.0000	-1.1890	-1.5413	-1.3211	-0.9688	-1.2331	-1.3211	-0.9248
0.0313	0.7486	0.9688	1.0129	1.0569	1.0569	1.0569	1.0569
0.0625	0.5285	0.7927	0.8808	0.9688	0.9248	0.9248	1.0129
0.1250	0.3963	0.6165	0.7486	0.7927	0.7927	0.7927	0.8808
0.2500	0.2642	0.4404	0.5725	0.6165	0.6165	0.6165	0.7046
0.5000	0.3083	0.3963	0.4844	0.5285	0.5285	0.5285	0.6165
0.7500	0.5285	0.4844	0.5285	0.6165	0.5725	0.5725	0.6606
0.8750	0.7046	0.7486	0.7486	0.7927	0.7927	0.7927	0.8808
0.9375	0.7927	0.7927	0.7927	0.8367	0.8367	0.8367	0.8808

TABLE 11

PRESSURE COEFFICIENTS

D/C= 2.00
PJ GAGE = 32.5 IN. HG.
QPSF= 11.7822 LB. PER SQUARE FOOT
CJ= .4411

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	-0.9245	-1.9810	-1.9810	-1.9810	-1.1005	-0.8804	-0.5283
0.0078	-3.8299	-3.7859	-2.6853	-2.3331	-1.3647	-1.1005	-0.5283
0.0156	-3.3016	-3.7859	-2.6853	-2.3331	-1.3647	-1.1005	-0.5283
0.0313	-1.9370	-3.6098	-2.6853	-2.3331	-1.3647	-1.1005	-0.5283
0.0625	-1.6288	-2.8614	-2.6853	-2.3331	-1.3647	-1.1005	-0.5283
0.1250	-1.4087	-1.8049	-2.7293	-2.3772	-1.4087	-1.1005	-0.5283
0.2500	-1.1446	-1.3207	-2.6413	-2.4212	-1.4527	-1.1446	-0.5283
0.3760	-1.1446	-1.2766	-2.0250	-2.3331	-1.4967	-1.1886	-0.4402
0.5000	-1.1446	-1.2326	-1.5408	-2.0690	-1.4967	-1.2326	-0.4842
0.6250	-1.2326	-1.3207	-1.2766	-1.6728	-1.4527	-1.2326	-0.4842
0.7500	-1.3647	-1.4087	-1.2766	-1.3207	-1.3647	-1.2326	-0.5283
0.8750	-1.6288	-1.6288	-1.3647	-1.1005	-1.3207	-1.2766	-0.5723
0.9375	-2.0690	-2.0250	-1.5848	-1.0565	-1.4087	-1.3207	-0.5723
0.9700	-1.9489	-1.8929	-1.5848	-1.0565	-1.4527	-1.3647	-0.6163
0.9840	-1.6728	-1.7168	-1.5408	-1.1005	-1.5408	-1.4527	-0.5723
0.9925	-1.5408	-1.5408	-1.4967	-1.1446	-1.6728	-1.5848	-0.5723
1.0000	-1.5408	-1.4967	-1.4527	-1.1005	-1.4967	-1.3207	-0.5283
0.0313	0.8804	1.0565	1.0565	1.1005	1.0565	1.1005	1.0565
0.0625	0.6603	0.8804	0.9685	1.0125	0.9685	0.9685	1.0565
0.1250	0.5283	0.7043	0.8364	0.8804	0.8364	0.8364	0.9685
0.2500	0.3962	0.5283	0.6603	0.7043	0.6603	0.6603	0.8804
0.5000	0.3962	0.4842	0.5723	0.6163	0.5723	0.5723	0.7924
0.7500	0.5723	0.5723	0.6163	0.7043	0.6603	0.6163	0.8364
0.8750	0.7043	0.7924	0.8364	0.8364	0.8364	0.8364	0.8804
0.9375	0.7484	0.8364	0.8364	0.8364	0.8804	0.8804	0.8804

TABLE 12

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 4.0 IN. HG.
QPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .0687

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	1.0101	0.3953	-0.6588	-1.2736	-1.0540	-0.7027	-0.4831
0.0078	-0.1318	-1.9763	-3.4695	-2.7229	-1.8885	-1.2736	-0.9662
0.0156	-0.3953	-1.6689	-3.0743	-2.7229	-1.8885	-1.2736	-0.9662
0.0313	-0.3953	-1.2736	-2.2398	-2.7668	-1.8885	-1.3175	-0.9662
0.0625	-0.4831	-1.0540	-1.4932	-2.6790	-1.9324	-1.3175	-0.9662
0.1250	-0.5709	-0.9662	-1.2736	-2.1959	-1.9763	-1.3615	-1.0101
0.2500	-0.5270	-0.7466	-0.9662	-1.1419	-1.8885	-1.4054	-1.0101
0.3760	-0.5709	-0.7466	-0.9223	-0.9662	-1.5810	-1.3615	-1.0540
0.5000	-0.5709	-0.7027	-0.8344	-0.8784	-1.0540	-1.2297	-1.0979
0.6250	-0.6149	-0.7466	-0.8344	-0.8784	-0.8344	-1.0540	-1.0979
0.7500	-0.6588	-0.7905	-0.8344	-0.8344	-0.6588	-0.8784	-1.0540
0.8750	-0.7905	-0.9662	-0.9223	-0.8344	-0.5709	-0.7466	-1.0540
0.9375	-0.9223	-1.2297	-1.0540	-0.9223	-0.5709	-0.7027	-1.0101
0.9700	-0.8784	-1.0979	-0.8784	-0.7905	-0.5709	-0.7027	-0.9662
0.9840	-0.8784	-0.9223	-0.7466	-0.6588	-0.5270	-0.7027	-0.9662
0.9925	-0.8784	-0.7905	-0.6588	-0.6149	-0.5270	-0.7027	-0.9223
1.0000	-0.9223	-0.7466	-0.6149	-0.6149	-0.5270	-0.6588	-0.8344
0.0313	0.0	0.5709	0.8784	0.9662	1.0101	1.0101	0.9662
0.0625	-0.0878	0.3513	0.6149	0.7466	0.8344	0.8784	0.8344
0.1250	-0.0878	0.2196	0.4392	0.5709	0.6588	0.6588	0.6149
0.2500	-0.1318	0.0878	0.2635	0.3074	0.4392	0.4392	0.3953
0.5000	-0.0878	0.0439	0.1757	0.2196	0.3074	0.2635	0.1757
0.7500	0.0	0.1318	0.2635	0.2635	0.3513	0.3074	0.2196
0.8750	0.3513	0.4392	0.5270	0.4392	0.4831	0.3513	0.2635
0.9375	0.5270	0.6149	0.6588	0.6149	0.6149	0.5270	0.3074

TABLE 13

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 7.0 IN. HG.
QPSF= 11.7886 LB. PER SQUARE FOOT
CJ= .1167

X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
				ANGLE OF ATTACK			
0.0	0.9680	0.0880	-1.3639	-1.2319	-1.1879	-0.7920	-0.5280
0.0078	-0.6600	-2.6399	-3.8718	-2.2879	-1.8479	-1.2759	-0.9679
0.0156	-0.7920	-2.1119	-3.7838	-2.2879	-1.8479	-1.2759	-0.9679
0.0313	-0.6600	-1.7599	-2.7719	-2.2879	-1.8479	-1.2759	-0.9679
0.0625	-0.7040	-1.1879	-1.7159	-2.2879	-1.8479	-1.2759	-0.9679
0.1250	-0.7040	-1.0999	-1.4519	-2.2879	-1.8919	-1.3199	-0.9679
0.2500	-0.6160	-0.8800	-1.0999	-1.8919	-1.9359	-1.3639	-1.0119
0.3760	-0.6600	-0.8800	-1.0559	-1.2319	-1.7599	-1.4079	-1.0119
0.5000	-0.7040	-0.8360	-0.9679	-0.8800	-1.4079	-1.3199	-1.0559
0.6250	-0.7480	-0.8800	-0.9679	-0.8360	-1.0999	-1.2319	-1.0999
0.7500	-0.7920	-0.9240	-0.9679	-0.8360	-0.8800	-1.0999	-1.0999
0.8750	-0.8800	-1.0999	-1.0559	-0.8360	-0.7480	-1.0119	-1.0999
0.9375	-1.0119	-1.3639	-1.1879	-0.9240	-0.7040	-0.9679	-1.0999
0.9700	-0.9679	-1.2319	-0.9679	-0.8360	-0.7040	-0.9679	-1.0559
0.9840	-0.9679	-1.0559	-0.8360	-0.7480	-0.7040	-0.9679	-1.0559
0.9925	-1.0119	-0.9240	-0.7480	-0.7040	-0.7040	-0.9679	-1.0559
1.0000	-1.0119	-0.8360	-0.7480	-0.7040	-0.7040	-0.8800	-0.8800
0.0313	0.2200	0.7040	0.9240	1.0559	1.0119	1.0119	1.0559
0.0625	0.1320	0.5280	0.7040	0.8800	0.8800	0.8800	0.9240
0.1250	0.0440	0.3520	0.5280	0.6600	0.7040	0.7040	0.7480
0.2500	-0.0440	0.2200	0.3080	0.4400	0.4840	0.4840	0.5280
0.5000	0.0	0.1760	0.2200	0.3520	0.3520	0.3080	0.3080
0.7500	0.1760	0.2640	0.3080	0.4400	0.3960	0.3520	0.3960
0.8750	0.4840	0.6160	0.6160	0.6600	0.6160	0.5280	0.5280
0.9375	0.6160	0.7040	0.7040	0.7480	0.7040	0.6600	0.6600

TABLE 14

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 9.2 IN. HG.
CPSF= 11.7886 LB. PER SQUARE FOOT
CJ= .1501

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.8800	-0.3960	-1.5839	-1.4079	-1.1879	-0.7480	-0.5280
0.0078	-1.0119	-3.1678	-3.7398	-2.2879	-1.7599	-1.2319	-0.9240
0.0156	-1.0559	-3.0798	-3.6958	-2.2879	-1.7599	-1.2319	-0.9240
0.0313	-0.8360	-2.5959	-3.3438	-2.2879	-1.7599	-1.2319	-0.9240
0.0625	-0.7920	-1.4079	-2.2879	-2.3319	-1.7599	-1.2319	-0.9240
0.1250	-0.7920	-1.2759	-1.5399	-2.3319	-1.8039	-1.2759	-0.9240
0.2500	-0.6600	-0.9679	-1.1439	-2.1119	-1.8479	-1.3199	-0.9679
0.3760	-0.7040	-0.9679	-1.0999	-1.5639	-1.7599	-1.3639	-1.0119
0.5000	-0.7480	-0.9240	-1.0119	-1.0999	-1.4959	-1.3199	-1.0559
0.6250	-0.7920	-0.9679	-1.0119	-0.9240	-1.1879	-1.2319	-1.0999
0.7500	-0.8360	-1.0119	-1.0119	-0.8800	-1.0119	-1.1439	-1.0559
0.8750	-0.8800	-1.1879	-1.0999	-0.9240	-0.8360	-1.0999	-1.0559
0.9375	-1.0559	-1.4519	-1.2319	-1.0119	-0.7920	-1.0999	-1.0999
0.9700	-1.0119	-1.2319	-1.0559	-0.9240	-0.7920	-1.0999	-1.0999
0.9840	-0.9679	-1.0559	-0.8800	-0.8800	-0.7920	-1.0999	-1.0999
0.9925	-0.9679	-0.9240	-0.7920	-0.8360	-0.8360	-1.1439	-1.0999
1.0000	-1.0119	-0.8800	-0.7920	-0.8360	-0.7920	-0.9679	-0.9240
0.0313	0.3520	0.7920	0.9679	1.0119	1.0119	1.0119	1.0559
0.0625	0.1760	0.5720	0.7480	0.8360	0.8800	0.8800	0.9240
0.1250	0.1320	0.3960	0.5720	0.7040	0.7040	0.7040	0.7480
0.2500	0.0440	0.2200	0.3960	0.4840	0.5280	0.4840	0.5280
0.5000	0.0880	0.1760	0.3080	0.3960	0.3960	0.3520	0.3520
0.7500	0.2640	0.3080	0.3520	0.4400	0.4400	0.3960	0.4400
0.8750	0.5720	0.6160	0.6600	0.6600	0.6600	0.6160	0.6160
0.9375	0.6600	0.7040	0.7480	0.7480	0.7480	0.7040	0.7040

TABLE 15

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 11.1 IN. HG.
CPSF= 11.7886 LB. PER SQUARE FOOT
CJ= .1779

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.6600	-0.5720	-1.5399	-1.4959	-1.1879	-0.7480	-0.5720
0.0078	-1.3639	-3.3878	-3.3878	-2.2439	-1.7159	-1.1879	-0.9240
0.0156	-1.2759	-2.8599	-3.3878	-2.2439	-1.7159	-1.1879	-0.9240
0.0313	-0.9679	-2.1559	-3.2998	-2.2439	-1.7159	-1.1879	-0.9240
0.0625	-0.9240	-1.4519	-2.6399	-2.2879	-1.7159	-1.1879	-0.9240
0.1250	-0.8800	-1.2759	-1.6279	-2.2319	-1.7159	-1.2319	-0.9240
0.2500	-0.7480	-1.0119	-1.1439	-2.2439	-1.7599	-1.2759	-0.9679
0.3760	-0.7920	-1.0119	-1.0999	-1.8039	-1.7159	-1.3199	-1.0119
0.5000	-0.7920	-0.9679	-1.0119	-1.2319	-1.5399	-1.2759	-1.0559
0.6250	-0.8360	-1.0119	-1.0119	-1.0119	-1.2759	-1.2319	-1.0559
0.7500	-0.8800	-1.0559	-1.0119	-0.9240	-1.0559	-1.1439	-1.0999
0.8750	-0.9679	-1.2319	-1.1439	-0.9240	-0.9240	-1.0999	-1.0999
0.9375	-1.1439	-1.4519	-1.2759	-0.9679	-0.8800	-1.0999	-1.1439
0.9700	-1.0999	-1.2319	-1.0999	-0.9240	-0.8800	-1.0999	-1.1439
0.9840	-1.0999	-1.0119	-0.9679	-0.9240	-0.8800	-1.1439	-1.1439
0.9925	-1.0559	-0.9240	-0.8360	-0.8800	-0.9240	-1.1879	-1.1439
1.0000	-1.0559	-0.8800	-0.8360	-0.8360	-0.8800	-1.0119	-0.9240
0.0313	0.3520	0.7920	0.9679	1.0119	1.0559	1.0119	1.0999
0.0625	0.2200	0.6160	0.7920	0.8800	0.9679	0.8800	0.9240
0.1250	0.1320	0.4400	0.6160	0.7040	0.7480	0.7480	0.7480
0.2500	0.0440	0.2640	0.3960	0.5280	0.5280	0.5280	0.5720
0.5000	0.0880	0.2200	0.3080	0.3960	0.4400	0.3960	0.3960
0.7500	0.2640	0.3080	0.3960	0.4840	0.4840	0.4400	0.4840
0.8750	0.5720	0.6600	0.7040	0.7040	0.7040	0.6600	0.7040
0.9375	0.6600	0.7480	0.7480	0.7920	0.7920	0.7480	0.7920

TABLE 16

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 15.2 IN. HG.
CPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .2344

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.3074	-0.9662	-1.5810	-1.6250	-1.1858	-0.7466	-0.6588
0.0078	-2.2398	-3.8209	-2.7668	-2.1959	-1.5810	-1.0979	-0.9223
0.0156	-1.8885	-3.5134	-2.8108	-2.1959	-1.5810	-1.0979	-0.9223
0.0313	-1.4054	-2.1959	-2.8108	-2.1959	-1.5810	-1.0979	-0.9223
0.0625	-1.1419	-1.6250	-2.7668	-2.1959	-1.6250	-1.0979	-0.9223
0.1250	-1.0979	-1.4493	-2.5033	-2.2398	-1.6689	-1.1419	-0.9223
0.2500	-0.8784	-1.0979	-1.5371	-2.2837	-1.7128	-1.1858	-0.9662
0.3760	-0.9223	-1.0979	-1.1419	-2.0202	-1.6689	-1.2297	-1.0101
0.5000	-0.9223	-1.0540	-1.0540	-1.5371	-1.5810	-1.2736	-1.0101
0.6250	-1.0101	-1.0979	-1.0979	-1.1419	-1.3615	-1.2297	-1.0540
0.7500	-1.0979	-1.1419	-1.0979	-0.9662	-1.1858	-1.1858	-1.0540
0.8750	-1.3175	-1.2736	-1.1858	-0.9223	-1.0540	-1.1858	-1.0979
0.9375	-1.6689	-1.5371	-1.4054	-0.9662	-1.0101	-1.2297	-1.1419
0.9700	-1.4493	-1.2736	-1.2736	-0.9223	-1.0101	-1.2736	-1.1858
0.9840	-1.2297	-1.0540	-1.1858	-0.9223	-1.0540	-1.3175	-1.1858
0.9925	-1.0540	-0.9662	-1.0979	-0.9223	-1.0979	-1.3615	-1.2297
1.0000	-1.0101	-0.9223	-1.0540	-0.8784	-1.0101	-1.1419	-1.0101
0.0313	0.6149	0.9223	1.0101	1.0979	1.0540	1.0101	1.0979
0.0625	0.4392	0.7027	0.8784	0.9223	0.9223	0.8784	0.9662
0.1250	0.3074	0.5270	0.7027	0.7905	0.7466	0.7466	0.8344
0.2500	0.1757	0.3513	0.4831	0.6149	0.5709	0.5270	0.6149
0.5000	0.2196	0.3074	0.3953	0.4831	0.4831	0.4392	0.5270
0.7500	0.4392	0.3953	0.4831	0.5709	0.5270	0.4831	0.5709
0.8750	0.6588	0.7027	0.7466	0.7466	0.7466	0.7466	0.7466
0.9375	0.7466	0.7905	0.7905	0.7905	0.7905	0.7905	0.8344

TABLE 17

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 20.0 IN. HG.
QPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .2965

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	-0.1757	-1.7128	-1.6689	-1.7128	-1.0540	-0.7466	-0.7905
0.0078	-2.8986	-4.4357	-2.5912	-2.1959	-1.4054	-1.0540	-0.9223
0.0156	-2.3277	-4.3040	-2.5912	-2.1959	-1.4054	-1.0540	-0.9223
0.0313	-1.8006	-2.5912	-2.6351	-2.1959	-1.4054	-1.0540	-0.9223
0.0625	-1.3175	-1.8885	-2.6351	-2.1959	-1.4054	-1.0540	-0.9223
0.1250	-1.2297	-1.5810	-2.5912	-2.2398	-1.4493	-1.0540	-0.9223
0.2500	-0.9662	-1.2297	-2.1081	-2.2837	-1.4932	-1.1419	-0.9223
0.3760	-1.0101	-1.1858	-1.3615	-2.1520	-1.5371	-1.1858	-0.9662
0.5000	-1.0101	-1.1419	-1.0979	-1.8006	-1.4932	-1.1858	-1.0101
0.6250	-1.0979	-1.1858	-1.0979	-1.4054	-1.4054	-1.1858	-1.0101
0.7500	-1.1858	-1.2297	-1.1419	-1.0979	-1.2736	-1.1858	-1.0540
0.8750	-1.4054	-1.4054	-1.2297	-0.9662	-1.1858	-1.1858	-1.0979
0.9375	-1.7567	-1.6250	-1.4493	-0.9662	-1.2297	-1.2297	-1.1419
0.9700	-1.5371	-1.4054	-1.4054	-0.9662	-1.2297	-1.2736	-1.1858
0.9840	-1.3175	-1.1858	-1.3175	-0.9662	-1.3175	-1.3615	-1.1858
0.9925	-1.1858	-1.0979	-1.2736	-0.9662	-1.3615	-1.4054	-1.2297
1.0000	-1.1419	-1.0979	-1.2297	-0.9662	-1.2297	-1.1858	-1.0540
0.0313	0.7466	0.9662	1.0101	1.0540	1.0101	1.0979	1.0979
0.0625	0.5709	0.7905	0.8784	0.9662	0.9223	0.9662	1.0101
0.1250	0.4392	0.6149	0.7466	0.8344	0.7905	0.8344	0.8784
0.2500	0.3074	0.4392	0.5709	0.6588	0.6149	0.6588	0.7027
0.5000	0.3074	0.3953	0.4831	0.5709	0.4831	0.5270	0.5709
0.7500	0.5270	0.4831	0.5270	0.6149	0.5709	0.6149	0.6149
0.8750	0.7027	0.7466	0.7466	0.7905	0.7905	0.8344	0.8344
0.9375	0.7466	0.7905	0.8344	0.8344	0.8344	0.8784	0.8784

TABLE 18

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 25.2 IN. HG.
QPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .3591

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	-0.5709	-1.9324	-1.8446	-1.7567	-1.0979	-0.8344	-0.8784
0.0078	-3.5134	-4.0844	-2.5472	-2.0641	-1.4054	-1.0540	-0.8784
0.0156	-2.8547	-4.0405	-2.5472	-2.0641	-1.4054	-1.0540	-0.8784
0.0313	-1.9324	-3.4695	-2.5472	-2.1081	-1.4054	-1.0540	-0.8784
0.0625	-1.4932	-2.6790	-2.5912	-2.1081	-1.4054	-1.0540	-0.8784
0.1250	-1.3615	-1.7128	-2.5912	-2.1520	-1.4493	-1.0540	-0.9223
0.2500	-1.0979	-1.3175	-2.4594	-2.2398	-1.4932	-1.0979	-0.9223
0.3760	-1.0979	-1.2736	-1.8446	-2.1520	-1.5371	-1.1419	-0.9223
0.5000	-1.0979	-1.1858	-1.3175	-1.8885	-1.4932	-1.1419	-0.9662
0.6250	-1.1858	-1.2736	-1.1419	-1.5371	-1.4493	-1.1858	-0.9662
0.7500	-1.2736	-1.3175	-1.1419	-1.2297	-1.3175	-1.1858	-0.9662
0.8750	-1.5371	-1.5371	-1.2297	-1.0540	-1.2736	-1.2297	-1.0101
0.9375	-1.9324	-1.8446	-1.4054	-1.0101	-1.3175	-1.2736	-1.0540
0.9700	-1.7128	-1.7128	-1.3615	-1.0101	-1.3615	-1.3175	-1.0540
0.9840	-1.4932	-1.5810	-1.3615	-1.0101	-1.4054	-1.4054	-1.0979
0.9925	-1.3615	-1.4932	-1.3175	-1.0540	-1.4932	-1.4932	-1.1419
1.0000	-1.3175	-1.4493	-1.2736	-1.0101	-1.3615	-1.2736	-0.9662
0.0313	0.8344	1.0101	1.0540	1.0540	1.0540	1.0979	1.0979
0.0625	0.6149	0.8344	0.9223	0.9662	0.9223	1.0101	1.0540
0.1250	0.4831	0.7027	0.7905	0.8344	0.7905	0.8784	0.9223
0.2500	0.3513	0.5270	0.6149	0.6588	0.6149	0.7027	0.7905
0.5000	0.3513	0.4831	0.5709	0.5709	0.5709	0.6149	0.7027
0.7500	0.5709	0.5270	0.6149	0.6588	0.6149	0.6588	0.7466
0.8750	0.7466	0.7466	0.7905	0.8344	0.7905	0.8784	0.8784
0.9375	0.7905	0.8344	0.8344	0.8344	0.8344	0.9223	0.9223

TABLE 19

PRESSURE COEFFICIENTS

D/C= 1.50
PJ GAGE = 32.5 IN. HG.
CPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .4402

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	-1.0540	-1.8006	-2.0641	-1.6689	-1.2297	-0.9223	-0.7027
0.0078	-4.1283	-2.8547	-2.5472	-1.8885	-1.2297	-0.9662	-0.4831
0.0156	-3.6452	-2.8547	-2.5472	-1.8885	-1.2297	-0.9662	-0.4831
0.0313	-2.0641	-2.8547	-2.5472	-1.8885	-1.2297	-0.9662	-0.4831
0.0625	-1.7128	-2.8108	-2.5472	-1.8885	-1.2297	-0.9662	-0.4831
0.1250	-1.4932	-2.5472	-2.5912	-1.9324	-1.2736	-0.9662	-0.4831
0.2500	-1.1858	-1.5810	-2.5912	-2.0202	-1.3175	-0.9662	-0.4831
0.3760	-1.1858	-1.1858	-2.2837	-2.0202	-1.3615	-1.0101	-0.5270
0.5000	-1.1858	-1.1858	-1.6689	-1.8446	-1.4054	-1.0540	-0.5709
0.6250	-1.2736	-1.2297	-1.2736	-1.6250	-1.3615	-1.0540	-0.5709
0.7500	-1.4054	-1.3175	-1.1858	-1.3615	-1.3175	-1.0979	-0.5709
0.8750	-1.6689	-1.5371	-1.1858	-1.1858	-1.3175	-1.1419	-0.5709
0.9375	-2.1520	-1.8885	-1.3175	-1.1419	-1.3615	-1.1858	-0.5709
0.9700	-2.0202	-1.8446	-1.3175	-1.1419	-1.4054	-1.2297	-0.5709
0.9840	-1.8006	-1.7567	-1.3175	-1.1858	-1.5371	-1.2736	-0.5709
0.9925	-1.6689	-1.7567	-1.3175	-1.2736	-1.6689	-1.3175	-0.5709
1.0000	-1.6250	-1.6689	-1.2736	-1.2297	-1.4493	-1.1858	-0.5709
0.0313	0.9662	1.0101	1.0540	1.0540	1.0540	1.0540	1.0540
0.0625	0.7905	0.8784	0.9662	1.0101	0.9662	1.0101	1.0101
0.1250	0.6588	0.7466	0.8344	0.8784	0.8344	0.8784	0.9223
0.2500	0.4831	0.5709	0.7027	0.7466	0.7027	0.7466	0.8344
0.5000	0.4831	0.5270	0.6149	0.6149	0.6149	0.6149	0.7905
0.7500	0.6588	0.6149	0.7027	0.7027	0.6588	0.6588	0.8344
0.8750	0.7905	0.7905	0.8344	0.8344	0.8344	0.8344	0.8784
0.9375	0.8344	0.7905	0.8344	0.8344	0.8344	0.8344	0.8784

TABLE 20

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 4.0 IN. HG.
QPSF= 11.8079 LB. PER SQUARE FOOT
CJ= .0687

X/C	ANGLE OF ATTACK -2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	1.0103	0.3953	-0.8346	-1.0981	-0.9224	-0.5710	-0.4393
0.0078	-0.1757	-1.9767	-3.3823	-2.1963	-1.6253	-1.1421	-0.8785
0.0156	-0.4393	-1.6692	-3.1187	-2.1963	-1.6253	-1.1421	-0.8785
0.0313	-0.3953	-1.2739	-2.2402	-2.1963	-1.6253	-1.1421	-0.8785
0.0625	-0.4832	-1.0542	-1.4496	-2.2402	-1.6692	-1.1421	-0.8785
0.1250	-0.5710	-0.9664	-1.2299	-2.1524	-1.6692	-1.1860	-0.8785
0.2500	-0.4832	-0.7028	-0.9224	-1.4056	-1.7131	-1.2299	-0.9224
0.3760	-0.5710	-0.7028	-0.8346	-0.8785	-1.4496	-1.2299	-0.9664
0.5000	-0.5710	-0.7028	-0.7907	-0.7467	-1.0981	-1.1421	-0.9664
0.6250	-0.6150	-0.7467	-0.7907	-0.7467	-0.8346	-1.0103	-1.0103
0.7500	-0.6589	-0.7907	-0.7907	-0.7028	-0.6589	-0.9224	-0.9664
0.8750	-0.7467	-0.9224	-0.8346	-0.7028	-0.5271	-0.7907	-0.9664
0.9375	-0.8785	-1.1421	-0.9664	-0.7467	-0.5271	-0.7467	-0.9224
0.9700	-0.8346	-1.0103	-0.7907	-0.6589	-0.5271	-0.7467	-0.8785
0.9840	-0.8346	-0.8785	-0.6589	-0.5710	-0.5271	-0.7467	-0.8785
0.9925	-0.8785	-0.7467	-0.5710	-0.5271	-0.4832	-0.7028	-0.8346
1.0000	-0.8785	-0.7028	-0.5710	-0.4832	-0.4832	-0.6150	-0.7467
0.0313	0.0439	0.5710	0.8785	0.9664	1.0103	1.0103	1.0103
0.0625	-0.0439	0.3953	0.6589	0.7907	0.8346	0.8346	0.8346
0.1250	-0.0439	0.2636	0.4832	0.6150	0.6589	0.6589	0.7028
0.2500	-0.1318	0.1318	0.3075	0.3953	0.4832	0.4393	0.4393
0.5000	-0.0879	0.0879	0.1757	0.2636	0.3075	0.2636	0.2636
0.7500	0.0	0.1757	0.2636	0.3514	0.3514	0.3075	0.2636
0.8750	0.3514	0.4832	0.4832	0.4393	0.3953	0.3514	0.3075
0.9375	0.5271	0.6150	0.6589	0.6150	0.5710	0.4393	0.3075

TABLE 21

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 7.0 IN. HG.
QPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .1165

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.8784	-0.0878	-1.3615	-1.1858	-0.9662	-0.6149	-0.5270
0.0078	-0.7466	-2.6790	-3.5134	-2.0202	-1.5371	-1.0540	-0.8784
0.0156	-0.8344	-2.1081	-3.4695	-2.0202	-1.5371	-1.0540	-0.8784
0.0313	-0.7027	-1.8446	-3.0743	-2.0202	-1.5371	-1.0540	-0.8784
0.0625	-0.7027	-1.1858	-1.7567	-2.0202	-1.5371	-1.0540	-0.8784
0.1250	-0.7466	-1.0979	-1.3615	-2.0202	-1.5810	-1.0540	-0.8784
0.2500	-0.6149	-0.8344	-1.0101	-1.9324	-1.6250	-1.0979	-0.9223
0.3760	-0.6588	-0.8344	-0.9223	-1.4054	-1.5371	-1.1858	-0.9662
0.5000	-0.6588	-0.7905	-0.8784	-0.9223	-1.2736	-1.1419	-1.0101
0.6250	-0.7027	-0.8344	-0.8784	-0.7466	-1.0101	-1.0979	-1.0101
0.7500	-0.7466	-0.8784	-0.8344	-0.7027	-0.8344	-1.0540	-1.0101
0.8750	-0.8344	-1.0101	-0.9223	-0.7027	-0.7027	-0.9662	-1.0101
0.9375	-0.9223	-1.2736	-1.0101	-0.7905	-0.6588	-0.9662	-1.0540
0.9700	-0.8784	-1.0979	-0.8344	-0.7027	-0.6588	-0.9223	-1.0101
0.9840	-0.9223	-0.9223	-0.7027	-0.6588	-0.6588	-0.9223	-1.0101
0.9925	-0.9223	-0.8344	-0.6149	-0.6588	-0.6588	-0.9223	-0.9662
1.0000	-0.9662	-0.7905	-0.6149	-0.6149	-0.6588	-0.7905	-0.7905
0.0313	0.2635	0.7466	0.9662	1.0101	1.0101	1.0101	1.0101
0.0625	0.1318	0.5270	0.7466	0.8344	0.8784	0.8784	0.8784
0.1250	0.0878	0.3953	0.6149	0.7027	0.7466	0.7027	0.7466
0.2500	0.0	0.2635	0.3953	0.5270	0.5270	0.5270	0.5270
0.5000	0.0439	0.2196	0.3074	0.3953	0.3953	0.3513	0.3513
0.7500	0.1318	0.3074	0.3953	0.4392	0.4392	0.3953	0.3953
0.8750	0.4831	0.6149	0.6588	0.6588	0.6149	0.5270	0.4392
0.9375	0.6149	0.7027	0.7466	0.7466	0.7466	0.6588	0.6149

TABLE 22

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 9.2 IN. HG.
QPSF= 11.7908 LB. PER SQUARE FOOT
CJ= .1501

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.7478	-0.3959	-1.4077	-1.3197	-0.9678	-0.6159	-0.6159
0.0078	-1.1877	-3.0793	-2.9913	-1.9795	-1.4517	-1.0118	-0.8798
0.0156	-1.1437	-2.9473	-2.9913	-1.9795	-1.4517	-1.0118	-0.8798
0.0313	-0.8798	-2.0235	-2.9913	-1.9795	-1.4517	-1.0118	-0.8798
0.0625	-0.8358	-1.3197	-2.5074	-1.9795	-1.4517	-1.0118	-0.8798
0.1250	-0.8358	-1.1437	-2.0675	-2.0235	-1.4957	-1.0558	-0.8798
0.2500	-0.6598	-0.8798	-1.0118	-1.9795	-1.5836	-1.0997	-0.9238
0.3760	-0.7038	-0.8798	-0.9678	-1.6716	-1.4957	-1.1437	-0.9678
0.5000	-0.7038	-0.8358	-0.8798	-1.1877	-1.3197	-1.1437	-0.9678
0.6250	-0.7918	-0.8798	-0.8798	-0.8798	-1.1437	-1.0997	-1.0118
0.7500	-0.7918	-0.9238	-0.8798	-0.7478	-0.9678	-1.0558	-1.0118
0.8750	-0.8798	-1.0558	-0.9678	-0.7038	-0.7918	-1.0558	-1.0558
0.9375	-1.0558	-1.2757	-1.0997	-0.7478	-0.7478	-1.0118	-1.0558
0.9700	-1.0118	-1.0997	-0.9238	-0.7478	-0.7918	-1.0118	-1.0558
0.9840	-1.0118	-0.9238	-0.7918	-0.7038	-0.7918	-1.0118	-1.0558
0.9925	-1.0118	-0.7918	-0.7038	-0.7038	-0.8358	-1.0558	-1.0558
1.0000	-0.9678	-0.7478	-0.7038	-0.6598	-0.7478	-0.8798	-0.8798
0.0313	0.4399	0.7918	0.9678	1.0118	1.0118	1.0118	1.0118
0.0625	0.2639	0.6159	0.7918	0.8798	0.9238	0.8798	0.9238
0.1250	0.1760	0.4399	0.6598	0.7478	0.7478	0.7478	0.7478
0.2500	0.0880	0.3079	0.4399	0.5719	0.5719	0.5279	0.5719
0.5000	0.1320	0.2639	0.3519	0.4399	0.4399	0.3959	0.3959
0.7500	0.3079	0.3519	0.4399	0.5279	0.4839	0.4399	0.4399
0.8750	0.5719	0.6598	0.7038	0.7038	0.6598	0.5719	0.5719
0.9375	0.6598	0.7478	0.7918	0.7918	0.7478	0.7038	0.6598

TABLE 23

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 11.1 IN. HG.
QPSF= 11.7886 LB. PER SQUARE FOOT
CJ= .1779

	ANGLE OF ATTACK						
X/C	-2.5	0.0	2.5	5.0	7.5	10.0	12.5
0.0	0.6160	-0.7480	-1.3199	-1.3639	-0.9679	-0.6160	-0.7040
0.0078	-1.4519	-3.3873	-2.5959	-1.9359	-1.4079	-1.0119	-0.8800
0.0156	-1.3199	-2.9918	-2.5959	-1.9359	-1.4079	-1.0119	-0.8800
0.0313	-0.9679	-2.0239	-2.5959	-1.9799	-1.4079	-1.0119	-0.8800
0.0625	-0.8800	-1.4079	-2.5519	-1.9799	-1.4079	-1.0559	-0.8800
0.1250	-0.8800	-1.2319	-2.2439	-2.0239	-1.4519	-1.0559	-0.8800
0.2500	-0.7040	-0.9240	-1.3199	-1.9799	-1.4959	-1.0999	-0.9240
0.3760	-0.7480	-0.9240	-0.9679	-1.8039	-1.4519	-1.1879	-0.9240
0.5000	-0.7480	-0.8800	-0.8800	-1.3639	-1.3199	-1.1439	-0.9679
0.6250	-0.7920	-0.9240	-0.9240	-1.0119	-1.1879	-1.0999	-1.0119
0.7500	-0.8360	-0.9679	-0.9240	-0.7920	-1.0119	-1.0559	-1.0119
0.8750	-0.9679	-1.0559	-1.0119	-0.7040	-0.8800	-1.0559	-1.0559
0.9375	-1.1439	-1.2759	-1.1439	-0.7480	-0.8360	-1.0119	-1.0559
0.9700	-1.0999	-1.0559	-1.0119	-0.7040	-0.8360	-1.0559	-1.0559
0.9840	-1.0559	-0.8800	-0.9240	-0.7040	-0.8800	-1.0559	-1.0999
0.9925	-1.0119	-0.7480	-0.8800	-0.7040	-0.9240	-1.0559	-1.0559
1.0000	-0.9679	-0.7480	-0.8360	-0.7040	-0.7920	-0.8800	-0.8800
0.0313	0.4840	0.8800	1.0119	1.0559	1.0559	1.0559	1.0559
0.0625	0.3080	0.6600	0.8800	0.9240	0.9240	0.9240	0.9240
0.1250	0.2200	0.5280	0.7040	0.7920	0.7920	0.7480	0.7920
0.2500	0.1320	0.3520	0.5280	0.6160	0.6160	0.5720	0.6160
0.5000	0.1320	0.3520	0.4400	0.5280	0.4840	0.3960	0.4840
0.7500	0.3080	0.3960	0.5280	0.5720	0.5280	0.4400	0.5280
0.8750	0.6160	0.7040	0.7480	0.7480	0.7480	0.6160	0.6600
0.9375	0.7040	0.7920	0.8360	0.8360	0.7920	0.7040	0.7480

TABLE 24

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 15.2 IN. HG.
QPSF= 12.2272 LB. PER SQUARE FOOT
CJ= .2274

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.9756	0.0424	-1.3150	-1.4423	-1.4423	-0.9332	-0.6787
0.0078	-0.3394	-2.4603	-3.9026	-2.3331	-1.9089	-1.2726	-0.9756
0.0156	-0.5090	-1.9513	-3.6905	-2.3331	-1.8665	-1.2726	-0.9756
0.0313	-0.4666	-1.5695	-2.2058	-2.3331	-1.8665	-1.2726	-0.9756
0.0625	-0.5515	-1.1453	-1.6544	-2.3755	-1.9089	-1.2726	-0.9756
0.1250	-0.6363	-1.0605	-1.3574	-2.3331	-1.9513	-1.2726	-0.9756
0.2500	-0.5515	-0.8484	-1.0181	-1.8665	-1.9937	-1.3150	-1.0181
0.3760	-0.6363	-0.8908	-0.9756	-1.1877	-1.8665	-1.3574	-1.0605
0.5000	-0.6787	-0.8908	-0.9332	-0.9332	-1.5271	-1.3150	-1.1029
0.6250	-0.7636	-0.9332	-0.9756	-0.9332	-1.1877	-1.1877	-1.1029
0.7500	-0.8060	-1.0181	-1.0181	-0.9332	-0.9332	-1.1029	-1.1029
0.8750	-0.8484	-1.2302	-1.1453	-1.0181	-0.8060	-1.0181	-1.1029
0.9375	-0.8484	-1.5271	-1.3150	-1.1453	-0.7636	-0.9756	-1.1453
0.9700	-0.8908	-1.3150	-1.0605	-1.1029	-0.7636	-1.0181	-1.1877
0.9840	-0.8908	-1.0605	-0.8908	-1.0181	-0.7636	-1.0605	-1.2302
0.9925	-0.9332	-0.9332	-0.8060	-0.9756	-0.7636	-1.1453	-1.2726
1.0000	-0.8908	-0.8908	-0.8060	-0.9332	-0.7636	-0.9756	-1.0181
0.0313	0.1697	0.6787	0.8908	0.9756	1.0605	1.0605	1.1029
0.0625	0.1273	0.5090	0.7211	0.8484	0.9332	0.9332	0.9756
0.1250	0.0848	0.3818	0.5515	0.7211	0.8060	0.8060	0.8060
0.2500	0.0424	0.2545	0.3818	0.5515	0.6363	0.6363	0.6363
0.5000	0.1273	0.2969	0.3394	0.4666	0.5515	0.5515	0.5090
0.7500	0.4242	0.4666	0.4242	0.5515	0.5939	0.5939	0.5515
0.8750	0.6363	0.6787	0.6787	0.7636	0.7636	0.8060	0.7636
0.9375	0.7211	0.7211	0.7636	0.8060	0.8060	0.8484	0.8484

TABLE 25

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 20.0 IN. HG.
QPSF= 12.2272 LB. PER SQUARE FOOT
CJ= .2879

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.8484	-0.3394	-1.7392	-1.6544	-1.8665	-0.9332	-0.8908
0.0078	-0.8484	-3.0118	-3.7329	-2.2907	-1.8240	-1.2302	-1.0181
0.0156	-0.8908	-2.4179	-3.6481	-2.2907	-1.8240	-1.2302	-1.0181
0.0313	-0.7211	-1.7392	-3.0966	-2.3331	-1.8240	-1.2302	-1.0181
0.0625	-0.7211	-1.3150	-2.1634	-2.2907	-1.8240	-1.2302	-1.0181
0.1250	-0.7211	-1.1453	-1.4847	-2.3331	-1.8665	-1.2726	-1.0181
0.2500	-0.6363	-0.9332	-1.1029	-2.1634	-1.9089	-1.2726	-1.0605
0.3760	-0.7211	-0.9756	-1.0605	-1.5695	-1.8665	-1.3150	-1.1029
0.5000	-0.7636	-0.9332	-1.0181	-1.1453	-1.6119	-1.3150	-1.1453
0.6250	-0.8484	-1.0181	-1.0605	-0.9756	-1.3574	-1.2726	-1.1877
0.7500	-0.8908	-1.1029	-1.1029	-0.9756	-1.1029	-1.1877	-1.1453
0.8750	-0.9756	-1.2726	-1.2726	-1.0181	-0.9332	-1.1453	-1.1877
0.9375	-1.0605	-1.6119	-1.4847	-1.1877	-0.8908	-1.1877	-1.2302
0.9700	-1.0605	-1.3574	-1.3150	-1.1453	-0.8908	-1.2302	-1.2726
0.9840	-1.0605	-1.1453	-1.1453	-1.0605	-0.8908	-1.2726	-1.3150
0.9925	-1.1029	-1.0181	-1.0605	-1.0605	-0.9332	-1.3574	-1.3998
1.0000	-1.1029	-0.9756	-1.0605	-1.0181	-0.9332	-1.1877	-1.1453
0.0313	0.4242	0.8060	0.9756	1.0181	1.0181	1.0181	1.0181
0.0625	0.2969	0.5939	0.8060	0.8908	0.9332	0.9332	0.9332
0.1250	0.2545	0.4666	0.6363	0.7636	0.8060	0.7636	0.8060
0.2500	0.1697	0.3394	0.5090	0.6363	0.6787	0.6363	0.6787
0.5000	0.2545	0.3394	0.4666	0.5515	0.5939	0.5515	0.5515
0.7500	0.5090	0.5090	0.5090	0.5939	0.6363	0.5939	0.5939
0.8750	0.6787	0.7211	0.7636	0.7636	0.8060	0.7636	0.7636
0.9375	0.7636	0.7636	0.8060	0.8060	0.8484	0.8060	0.8060

TABLE 26

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 25.2 IN. HG.
QPSF= 12.2272 LB. PER SQUARE FOOT
CJ= .3490

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.5090	-0.7636	-1.6968	-1.7816	-1.4423	-0.9332	-0.9332
0.0078	-1.6544	-3.5208	-3.0542	-2.2907	-1.7392	-1.1877	-0.9756
0.0156	-1.3998	-3.0118	-3.0118	-2.2482	-1.6968	-1.1877	-0.9756
0.0313	-1.0605	-1.8240	-3.0542	-2.2907	-1.7392	-1.1877	-0.9756
0.0625	-0.9332	-1.4423	-2.7997	-2.2907	-1.7392	-1.1877	-0.9756
0.1250	-0.8908	-1.2726	-1.9089	-2.3331	-1.7392	-1.2302	-0.9756
0.2500	-0.7636	-1.0181	-1.1877	-2.2907	-1.8240	-1.2302	-1.0181
0.3760	-0.8484	-1.0181	-1.1029	-1.9089	-1.7816	-1.2726	-1.0181
0.5000	-0.8908	-1.0181	-1.0605	-1.3574	-1.6119	-1.3150	-1.0605
0.6250	-0.9756	-1.1029	-1.1453	-1.0605	-1.4423	-1.2726	-1.1029
0.7500	-1.0605	-1.1453	-1.1877	-0.9756	-1.2302	-1.2302	-1.1029
0.8750	-1.3150	-1.3998	-1.3574	-1.0181	-1.0605	-1.2302	-1.1453
0.9375	-1.7816	-1.7392	-1.6544	-1.1453	-1.0181	-1.2726	-1.2302
0.9700	-1.7392	-1.5695	-1.6119	-1.1029	-1.0181	-1.3574	-1.2726
0.9840	-1.5695	-1.3998	-1.4847	-1.0605	-1.1029	-1.4423	-1.3574
0.9925	-1.4423	-1.2302	-1.3998	-1.0605	-1.1453	-1.5271	-1.3998
1.0000	-1.4423	-1.1877	-1.3574	-1.0181	-1.1029	-1.3150	-1.1453
0.0313	0.6363	0.8908	1.0181	1.0181	1.0181	1.0181	1.1029
0.0625	0.4666	0.6787	0.8908	0.9332	0.9756	0.9332	1.0181
0.1250	0.3818	0.5515	0.7211	0.8060	0.8484	0.8060	0.8908
0.2500	0.2969	0.4242	0.5939	0.6787	0.6787	0.6787	0.7636
0.5000	0.3394	0.4242	0.5515	0.6363	0.6363	0.5939	0.6363
0.7500	0.5939	0.5515	0.5939	0.6787	0.6787	0.6363	0.6787
0.8750	0.7211	0.7211	0.7636	0.8060	0.8060	0.8060	0.8484
0.9375	0.7636	0.8060	0.8060	0.8484	0.8484	0.8484	0.8908

TABLE 27

PRESSURE COEFFICIENTS

D/C= 1.00
PJ GAGE = 32.5 IN. HG.
QPSF= 11.8635 LB. PER SQUARE FOOT
CJ= .4385

	ANGLE OF ATTACK					
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	-0.1749	-1.8362	-1.8362	-2.0548	-1.3553	-1.0930	-0.9618
0.0078	-2.7106	-4.5469	-2.5358	-2.2734	-1.5302	-1.1367	-0.7870
0.0156	-2.1423	-4.2846	-2.4920	-2.2297	-1.4865	-1.1367	-0.7870
0.0313	-1.5739	-2.3609	-2.5358	-2.2734	-1.5302	-1.1367	-0.7870
0.0625	-1.2242	-1.7925	-2.5795	-2.2734	-1.5302	-1.1804	-0.7870
0.1250	-1.1367	-1.4865	-2.5358	-2.3172	-1.5302	-1.1804	-0.7870
0.2500	-0.9181	-1.1367	-2.1423	-2.3609	-1.5739	-1.1804	-0.8307
0.3760	-0.9618	-1.1367	-1.3990	-2.2297	-1.6176	-1.2242	-0.8744
0.5000	-1.0056	-1.1367	-1.1367	-1.8800	-1.5739	-1.2679	-0.8744
0.6250	-1.1367	-1.2242	-1.1367	-1.3990	-1.4865	-1.2679	-0.9181
0.7500	-1.2242	-1.3116	-1.1804	-1.1367	-1.3553	-1.2679	-0.9618
0.8750	-1.5302	-1.5739	-1.3553	-1.0056	-1.2242	-1.3116	-0.9618
0.9375	-2.0548	-1.9674	-1.6614	-1.0056	-1.2679	-1.3553	-1.0056
0.9700	-1.9674	-1.9237	-1.6614	-1.0056	-1.3116	-1.4428	-0.9618
0.9840	-1.7925	-1.7925	-1.6614	-1.0056	-1.3990	-1.5302	-1.0056
0.9925	-1.6614	-1.7051	-1.6176	-1.0056	-1.5302	-1.6614	-1.0056
1.0000	-1.6176	-1.6614	-1.5739	-1.0056	-1.3990	-1.4428	-0.8744
0.0313	0.7870	1.0056	1.0056	1.0493	1.0493	1.0493	1.0930
0.0625	0.5684	0.8744	0.9618	1.0056	1.0056	1.0056	1.0930
0.1250	0.4809	0.6995	0.8307	0.8744	0.8744	0.9181	1.0493
0.2500	0.3935	0.5684	0.6558	0.7870	0.7432	0.7870	0.9618
0.5000	0.4372	0.5684	0.6121	0.6995	0.6995	0.6995	0.8307
0.7500	0.6121	0.6558	0.6995	0.7432	0.7432	0.7432	0.8744
0.8750	0.6995	0.7870	0.7870	0.8744	0.8307	0.8307	0.9618
0.9375	0.7432	0.8307	0.8307	0.8744	0.8744	0.8307	0.9618

TABLE 28

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 4.0 IN. HG.
QPSF= 11.8528 LB. PER SQUARE FOOT
CJ= .0685

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.9189	1.0065	0.2626	-1.0065	-1.0502	-0.8752	-0.5689
0.0078	0.7002	-0.2626	-2.1442	-3.4132	-2.0129	-1.4878	-1.0065
0.0156	0.3501	-0.4814	-1.7504	-3.2382	-1.9692	-1.4878	-1.0065
0.0313	0.1313	-0.4376	-1.4003	-2.3193	-2.0129	-1.4878	-1.0065
0.0625	-0.0875	-0.5251	-1.0502	-1.4878	-2.0567	-1.4878	-1.0065
0.1250	-0.2626	-0.5689	-0.9627	-1.2690	-2.0129	-1.5316	-1.0502
0.2500	-0.3501	-0.4814	-0.7439	-0.9189	-1.6191	-1.5316	-1.0940
0.3760	-0.4376	-0.5689	-0.7002	-0.8752	-1.0065	-1.4003	-1.0940
0.5000	-0.4814	-0.5689	-0.7002	-0.7877	-0.7439	-1.0940	-1.0502
0.6250	-0.5689	-0.6126	-0.7439	-0.7877	-0.6564	-0.8752	-1.0065
0.7500	-0.6126	-0.6564	-0.7439	-0.7877	-0.6126	-0.6564	-0.9189
0.8750	-0.7877	-0.7439	-0.8752	-0.8314	-0.6126	-0.5251	-0.8314
0.9375	-0.9627	-0.8752	-1.1377	-0.9627	-0.6564	-0.5251	-0.7877
0.9700	-0.9189	-0.8314	-1.0065	-0.7877	-0.6126	-0.5251	-0.7877
0.9840	-0.9189	-0.8752	-0.8314	-0.6564	-0.5689	-0.4814	-0.7877
0.9925	-0.9189	-0.8752	-0.7002	-0.6126	-0.5251	-0.4814	-0.7877
1.0000	-0.9627	-0.9189	-0.6564	-0.5689	-0.4814	-0.4814	-0.6564
0.0313	-0.5689	0.0875	0.6564	0.8752	1.0065	1.0065	1.0065
0.0625	-0.4814	0.0	0.4814	0.6564	0.8314	0.8752	0.8752
0.1250	-0.3501	0.0	0.3501	0.4814	0.6564	0.7002	0.7002
0.2500	-0.3063	-0.0875	0.1750	0.3063	0.4814	0.5251	0.4814
0.5000	-0.2188	-0.0438	0.1750	0.2188	0.3501	0.3501	0.3063
0.7500	0.0875	0.0438	0.2188	0.3063	0.3938	0.3938	0.3501
0.8750	0.3063	0.3938	0.5251	0.4814	0.4814	0.4376	0.3501
0.9375	0.4376	0.5689	0.6564	0.6126	0.6564	0.5689	0.3938

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 7.0 IN. HG.
QPSF= 11.8528 LB. PER SQUARE FOOT
CJ= .1161

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	1.0065	0.8752	-0.3063	-1.4003	-1.1815	-0.8752	-0.6126
0.0078	0.3938	-0.8314	-2.8881	-3.1507	-1.8817	-1.3565	-0.9627
0.0156	0.0438	-0.8752	-2.3193	-3.1069	-1.8817	-1.3565	-0.9627
0.0313	-0.0875	-0.7002	-1.9692	-3.0632	-1.8817	-1.3565	-0.9627
0.0625	-0.2626	-0.7002	-1.2253	-2.2755	-1.9254	-1.3565	-0.9627
0.1250	-0.3938	-0.7002	-1.0940	-1.4441	-1.9254	-1.4003	-1.0065
0.2500	-0.4376	-0.6126	-0.8314	-1.0065	-1.8817	-1.4441	-1.0502
0.3760	-0.5251	-0.6564	-0.8314	-0.9189	-1.4878	-1.4003	-1.0940
0.5000	-0.5689	-0.6564	-0.7877	-0.8752	-1.0065	-1.2253	-1.0940
0.6250	-0.6564	-0.7002	-0.8314	-0.8752	-0.7439	-1.0502	-1.0502
0.7500	-0.7002	-0.7439	-0.8314	-0.8314	-0.6564	-0.8752	-1.0065
0.8750	-0.8752	-0.8314	-0.9627	-0.9189	-0.6564	-0.7439	-1.0065
0.9375	-1.0065	-0.9189	-1.2253	-1.0502	-0.6564	-0.7002	-1.0065
0.9700	-0.9627	-0.9189	-1.0502	-0.8752	-0.6126	-0.7002	-1.0065
0.9840	-0.9627	-0.9189	-0.9189	-0.7439	-0.6126	-0.7439	-0.9627
0.9925	-1.0065	-0.9189	-0.7877	-0.7002	-0.5689	-0.7439	-0.9627
1.0000	-1.0065	-0.9627	-0.7439	-0.6564	-0.5689	-0.6564	-0.8314
0.0313	-0.2626	0.3063	0.8314	0.9627	1.0065	1.0065	1.0065
0.0625	-0.2626	0.1750	0.6126	0.7877	0.8752	0.9189	0.9189
0.1250	-0.1750	0.1313	0.4814	0.6126	0.7439	0.7439	0.7439
0.2500	-0.1750	0.0438	0.3063	0.4376	0.5689	0.5689	0.5689
0.5000	-0.0875	0.0875	0.2626	0.3501	0.4814	0.4376	0.3938
0.7500	0.2188	0.2188	0.3501	0.4376	0.5251	0.4814	0.4376
0.8750	0.4814	0.5251	0.6564	0.6126	0.6564	0.6126	0.5251
0.9375	0.5689	0.6564	0.7439	0.7002	0.7439	0.7002	0.6564

TABLE 30

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 9.2 IN. HG.
CPSF= 11.8528 LB. PER SQUARE FOOT
CJ= .1493

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	1.0065	0.6564	-0.6126	-1.3128	-1.3128	-0.9189	-0.6126
0.0078	0.2188	-1.2690	-3.2382	-2.4943	-1.8817	-1.2690	-0.9627
0.0156	-0.0875	-1.2253	-2.7568	-2.4943	-1.8379	-1.2690	-0.9627
0.0313	-0.1750	-0.9189	-1.9692	-2.5380	-1.8817	-1.3128	-0.9627
0.0625	-0.3063	-0.8314	-1.3565	-2.4943	-1.8817	-1.2690	-0.9627
0.1250	-0.4814	-0.7877	-1.1815	-2.1005	-1.9254	-1.3128	-0.9627
0.2500	-0.4376	-0.6564	-0.9189	-1.1377	-1.9254	-1.3565	-1.0065
0.3760	-0.5251	-0.7002	-0.8752	-0.9189	-1.7066	-1.3565	-1.0502
0.5000	-0.5689	-0.7002	-0.8314	-0.8752	-1.2690	-1.2253	-1.0940
0.6250	-0.6564	-0.7439	-0.8752	-0.8752	-0.9627	-1.2253	-1.0502
0.7500	-0.7002	-0.7877	-0.9189	-0.8752	-0.7877	-0.9627	-1.0502
0.8750	-0.8752	-0.8752	-1.0502	-0.9189	-0.7002	-0.8752	-1.0502
0.9375	-0.9627	-1.0940	-1.2690	-1.0502	-0.7002	-0.8314	-1.0502
0.9700	-0.9627	-1.0502	-1.0940	-0.9189	-0.6564	-0.8314	-1.0502
0.9840	-0.9627	-1.0502	-0.9189	-0.8314	-0.6564	-0.8314	-1.0940
0.9925	-1.0065	-1.0065	-0.8314	-0.7877	-0.6564	-0.8752	-1.0940
1.0000	-1.0065	-1.0065	-0.7877	-0.7439	-0.6564	-0.7877	-0.8752
0.0313	-0.0875	0.4814	0.8314	0.9627	1.0065	1.0502	1.0502
0.0625	-0.1313	0.3501	0.6126	0.7877	0.8752	0.9189	0.9189
0.1250	-0.0875	0.2626	0.4814	0.6564	0.7439	0.7877	0.7877
0.2500	-0.0875	0.1313	0.3501	0.4814	0.5689	0.6126	0.6126
0.5000	0.0	0.1750	0.3063	0.3938	0.4814	0.4814	0.4376
0.7500	0.3063	0.3063	0.3938	0.4814	0.5251	0.5251	0.5251
0.8750	0.5251	0.6126	0.6564	0.7002	0.7002	0.6564	0.6126
0.9375	0.6126	0.7002	0.7002	0.7439	0.7439	0.7877	0.7002

TABLE 31

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 11.1 IN. HG.
QPSF= 11.8528 LB. PER SQUARE FOOT
CJ= .1769

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	1.0065	0.3938	-0.9189	-1.3128	-1.3128	-0.8752	-0.7439
0.0078	0.0	-1.8817	-3.4570	-2.3630	-1.7941	-1.2253	-0.9627
0.0156	-0.2626	-1.5753	-3.1507	-2.3630	-1.7941	-1.2253	-0.9627
0.0313	-0.3063	-1.2253	-2.0129	-2.4068	-1.7941	-1.2690	-0.9627
0.0625	-0.4376	-1.0065	-1.4441	-2.4068	-1.7941	-1.2690	-0.9627
0.1250	-0.5251	-0.9627	-1.2690	-2.2317	-1.8379	-1.3128	-1.0065
0.2500	-0.4814	-0.7439	-0.9627	-1.4003	-1.8379	-1.3565	-1.0502
0.3760	-0.5689	-0.7877	-0.9189	-0.9627	-1.7504	-1.3565	-1.0940
0.5000	-0.6126	-0.7877	-0.8752	-0.8752	-1.4003	-1.2690	-1.0940
0.6250	-0.7002	-0.8752	-0.9189	-0.8752	-1.0940	-1.1815	-1.0940
0.7500	-0.7439	-0.9189	-0.9627	-0.8752	-0.8314	-1.0502	-1.0940
0.8750	-0.8314	-1.1377	-1.0940	-0.9627	-0.7002	-1.0065	-1.0940
0.9375	-0.9189	-1.4878	-1.2690	-1.0940	-0.7002	-0.9627	-1.1377
0.9700	-0.8752	-1.3565	-1.0502	-1.0065	-0.6564	-0.9627	-1.1377
0.9840	-0.9189	-1.1815	-0.8752	-0.9189	-0.6564	-1.0065	-1.1815
0.9925	-0.9189	-1.0502	-0.7877	-0.8752	-0.7002	-1.0065	-1.1815
1.0000	-0.9627	-0.9627	-0.7877	-0.8314	-0.7002	-0.9189	-0.9627
0.0313	0.0438	0.6126	0.8752	0.9627	1.0065	1.0065	1.0065
0.0625	0.0	0.3938	0.7002	0.8314	0.9189	0.9189	0.9189
0.1250	0.0	0.3501	0.5689	0.7002	0.7877	0.7877	0.7877
0.2500	-0.0438	0.2188	0.3938	0.5251	0.6126	0.5689	0.6126
0.5000	0.0875	0.2188	0.3501	0.4814	0.5251	0.4814	0.4814
0.7500	0.3501	0.3938	0.4376	0.5251	0.5689	0.5251	0.5251
0.8750	0.6126	0.6564	0.7002	0.7002	0.7439	0.7002	0.6126
0.9375	0.6564	0.7002	0.7439	0.7877	0.7877	0.7877	0.7439

TABLE 32

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 15.2 IN. HG.
QPSF= 11.9576 LB. PER SQUARE FOOT
CJ= .2318

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.9976	0.0868	-1.2579	-1.3880	-1.3447	-0.8675	-0.8241
0.0078	-0.3036	-2.2989	-3.8171	-2.2555	-1.7350	-1.1711	-0.9543
0.0156	-0.5205	-1.8652	-3.6002	-2.2122	-1.7350	-1.1711	-0.9543
0.0313	-0.4771	-1.4314	-2.0820	-2.2555	-1.7350	-1.1711	-0.9543
0.0625	-0.5205	-1.0844	-1.5615	-2.2555	-1.7350	-1.1711	-0.9543
0.1250	-0.6073	-0.9976	-1.3013	-2.2122	-1.7784	-1.2145	-0.9976
0.2500	-0.5639	-0.7808	-0.9976	-1.7784	-1.8218	-1.2579	-1.0410
0.3760	-0.6506	-0.8241	-0.9543	-1.1278	-1.7350	-1.3013	-1.0844
0.5000	-0.6506	-0.8241	-0.9109	-0.8675	-1.4748	-1.2579	-1.1278
0.6250	-0.7374	-0.8675	-0.9543	-0.8675	-1.1711	-1.2145	-1.1278
0.7500	-0.7808	-0.9543	-0.9543	-0.8675	-0.9109	-1.1278	-1.0844
0.8750	-0.8675	-1.1711	-1.1278	-0.9543	-0.7374	-1.0844	-1.1278
0.9375	-0.8675	-1.4314	-1.3013	-1.0410	-0.6940	-1.0844	-1.1711
0.9700	-0.9109	-1.2579	-1.0844	-0.9543	-0.6940	-1.1278	-1.2145
0.9840	-0.9109	-0.9976	-0.8675	-0.9109	-0.7374	-1.1711	-1.2579
0.9925	-0.9543	-0.8675	-0.8241	-0.8675	-0.7374	-1.2145	-1.2579
1.0000	-0.9543	-0.8241	-0.7808	-0.8241	-0.6940	-0.9976	-1.0410
0.0313	0.1735	0.6940	0.9543	1.0410	1.0410	1.0410	1.0410
0.0625	0.0868	0.5205	0.7808	0.9109	0.9543	0.9543	0.9976
0.1250	0.0868	0.3904	0.6506	0.7808	0.8241	0.8241	0.8241
0.2500	0.0434	0.3036	0.4771	0.6073	0.6940	0.6506	0.6940
0.5000	0.1301	0.3036	0.4338	0.5639	0.6073	0.5639	0.5639
0.7500	0.3904	0.4771	0.5205	0.6073	0.6506	0.6073	0.6073
0.8750	0.6073	0.6940	0.7374	0.7808	0.8241	0.7808	0.7374
0.9375	0.6940	0.7808	0.8241	0.8241	0.8675	0.8241	0.8241

TABLE 33

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 20.0 IN. HG.
QPSF= 11.9576 LB. PER SQUARE FOOT
CJ= .2932

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.8675	-0.2603	-1.6049	-1.6483	-1.3447	-0.9109	-0.9543
0.0078	-0.7808	-2.9062	-3.4267	-2.2122	-1.6483	-1.1278	-0.9976
0.0156	-0.8241	-2.2989	-3.3833	-2.2122	-1.6049	-1.1278	-0.9976
0.0313	-0.6506	-1.6483	-2.9929	-2.2122	-1.6049	-1.1278	-0.9976
0.0625	-0.6940	-1.2145	-2.0387	-2.2122	-1.6483	-1.1278	-0.9976
0.1250	-0.6940	-1.1278	-1.3880	-2.2122	-1.6483	-1.1711	-0.9976
0.2500	-0.6506	-0.8675	-1.0410	-2.1254	-1.6917	-1.2145	-1.0410
0.3760	-0.6940	-0.9109	-0.9976	-1.6049	-1.6917	-1.2579	-1.0844
0.5000	-0.7374	-0.9109	-0.9543	-1.0844	-1.5182	-1.2579	-1.1278
0.6250	-0.8241	-0.9543	-0.9976	-0.9109	-1.3447	-1.2145	-1.1278
0.7500	-0.8675	-1.0410	-0.9976	-0.9109	-1.0844	-1.1711	-1.1278
0.8750	-0.9109	-1.2145	-1.1278	-0.9109	-0.9543	-1.1711	-1.1711
0.9375	-0.9543	-1.5182	-1.3880	-0.9976	-0.9109	-1.2145	-1.2145
0.9700	-0.9976	-1.3447	-1.2145	-0.9543	-0.9109	-1.2579	-1.2579
0.9840	-0.9976	-1.0844	-1.0844	-0.9109	-0.9543	-1.3447	-1.3013
0.9925	-1.0410	-0.9976	-0.9976	-0.9109	-0.9976	-1.4314	-1.3447
1.0000	-1.0410	-0.9543	-0.9543	-0.8675	-0.9109	-1.1711	-1.1278
0.0313	0.3470	0.8241	0.9976	1.0844	1.0844	1.0844	1.0844
0.0625	0.2169	0.6506	0.8241	0.9543	0.9976	0.9976	1.0410
0.1250	0.1735	0.5205	0.6940	0.8241	0.8675	0.8675	0.9109
0.2500	0.1301	0.3904	0.5639	0.6940	0.7374	0.7374	0.7808
0.5000	0.2169	0.3904	0.5205	0.6506	0.6506	0.6073	0.6506
0.7500	0.4771	0.5639	0.5639	0.6940	0.6940	0.6940	0.6940
0.8750	0.6506	0.7374	0.7808	0.8241	0.8241	0.8241	0.8241
0.9375	0.7374	0.7808	0.8241	0.8675	0.8675	0.8675	0.8675

TABLE 34

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 25.2 IN. HG.
QPSF= 11.8507 LB. PER SQUARE FOOT
CJ= .3579

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.4814	-0.8316	-1.5756	-1.7945	-1.2693	-1.0066	-1.0942
0.0078	-1.5319	-3.3263	-2.6260	-2.1008	-1.4443	-1.0942	-0.9629
0.0156	-1.3568	-2.9324	-2.6260	-2.1008	-1.4443	-1.0942	-0.9629
0.0313	-1.0066	-1.7069	-2.6698	-2.1446	-1.4881	-1.0942	-0.9629
0.0625	-0.8753	-1.3568	-2.6260	-2.1446	-1.4881	-1.0942	-0.9629
0.1250	-0.8753	-1.1817	-2.1884	-2.1446	-1.4881	-1.0942	-0.9629
0.2500	-0.7003	-0.9191	-1.2255	-2.1884	-1.5319	-1.1380	-1.0066
0.3760	-0.7878	-0.9191	-1.0504	-1.9258	-1.5756	-1.1817	-1.0504
0.5000	-0.8316	-0.9191	-1.0066	-1.5319	-1.4881	-1.2255	-1.0504
0.6250	-0.9191	-1.0066	-1.0504	-1.0504	-1.3568	-1.2255	-1.0504
0.7500	-1.0066	-1.0942	-1.0942	-0.9191	-1.1817	-1.1817	-1.0504
0.8750	-1.2693	-1.2693	-1.2693	-0.8753	-1.0066	-1.2255	-1.0942
0.9375	-1.7069	-1.6194	-1.5319	-0.9191	-1.0066	-1.2693	-1.1817
0.9700	-1.6194	-1.4881	-1.4881	-0.8753	-1.0504	-1.3568	-1.1817
0.9840	-1.5319	-1.3130	-1.4443	-0.8753	-1.0942	-1.4443	-1.2255
0.9925	-1.4443	-1.2255	-1.4006	-0.8753	-1.1817	-1.5319	-1.2693
1.0000	-1.4006	-1.1817	-1.3130	-0.8753	-1.0942	-1.2693	-1.0942
0.0313	0.6127	0.9191	0.9629	0.9629	1.0504	1.0504	1.0504
0.0625	0.4814	0.7440	0.8753	0.9191	0.9629	1.0066	1.0504
0.1250	0.3939	0.6127	0.7440	0.8316	0.8753	0.9191	0.9191
0.2500	0.3064	0.5252	0.6127	0.7003	0.7440	0.7440	0.8316
0.5000	0.3501	0.5252	0.5690	0.6565	0.7003	0.6565	0.7440
0.7500	0.5690	0.5690	0.6127	0.7003	0.7003	0.7003	0.7440
0.8750	0.7003	0.7440	0.7440	0.7878	0.8316	0.8316	0.8316
0.9375	0.7440	0.7878	0.7878	0.7878	0.8316	0.8753	0.8316

TABLE 35

PRESSURE COEFFICIENTS

D/C= 0.75
PJ GAGE = 32.5 IN. HG.
CPSF= 11.8507 LB. PER SQUARE FOOT
CJ= .4387

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.0438	-1.5319	-1.7069	-1.8382	-1.1380	-1.1380	-0.7878
0.0078	-2.3634	-4.0266	-2.3197	-1.9258	-1.2693	-1.0504	-0.5690
0.0156	-1.8382	-3.7202	-2.3197	-1.9258	-1.2693	-1.0504	-0.5690
0.0313	-1.4006	-1.9695	-2.3634	-1.9258	-1.2693	-1.0504	-0.5690
0.0625	-1.0942	-1.5756	-2.3634	-1.9258	-1.2693	-1.0504	-0.5690
0.1250	-1.0066	-1.3568	-2.3197	-1.9695	-1.2693	-1.0504	-0.5690
0.2500	-0.8316	-1.0504	-1.9695	-2.0571	-1.3130	-1.0942	-0.5690
0.3760	-0.8753	-1.0504	-1.2693	-2.0133	-1.3568	-1.1380	-0.5690
0.5000	-0.9191	-1.0066	-1.0066	-1.7069	-1.3568	-1.1817	-0.6127
0.6250	-1.0066	-1.0942	-1.0066	-1.4006	-1.3130	-1.1817	-0.6565
0.7500	-1.1380	-1.1380	-1.0504	-1.0504	-1.2255	-1.1817	-0.7003
0.8750	-1.4006	-1.3568	-1.1817	-0.8753	-1.1817	-1.2255	-0.7440
0.9375	-1.8820	-1.7069	-1.4443	-0.8316	-1.2255	-1.3130	-0.7440
0.9700	-1.7507	-1.5756	-1.4006	-0.8316	-1.3130	-1.3568	-0.7440
0.9840	-1.5756	-1.4443	-1.4006	-0.8316	-1.4006	-1.4443	-0.7440
0.9925	-1.4881	-1.3568	-1.3568	-0.8316	-1.5319	-1.5319	-0.7440
1.0000	-1.4443	-1.3130	-1.3130	-0.8316	-1.3568	-1.3130	-0.5690
0.0313	0.7878	1.0066	1.0066	1.0066	1.0066	1.0504	1.0504
0.0625	0.6127	0.8316	0.9191	1.0066	1.0066	1.0504	1.0942
0.1250	0.5252	0.7003	0.8316	0.9191	0.9191	0.9629	1.0504
0.2500	0.4377	0.6127	0.7003	0.7878	0.7878	0.8316	1.0066
0.5000	0.4814	0.5690	0.6565	0.7440	0.7003	0.7440	0.9629
0.7500	0.6565	0.6565	0.7440	0.7878	0.7878	0.7878	0.9191
0.8750	0.7440	0.7878	0.8316	0.8753	0.8316	0.8753	0.9629
0.9375	0.7878	0.8316	0.8316	0.8316	0.8316	0.8753	0.9191

TABLE 36

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 4.0 IN. HG.
QPSF= 11.8507 LB. PER SQUARE FOOT
CJ= .0685

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.7878	0.9629	0.2626	-0.9191	-0.9629	-0.7878	-0.5252
0.0078	0.7440	-0.2188	-2.0133	-3.2388	-1.7945	-1.2693	-0.9191
0.0156	0.3501	-0.4377	-1.6632	-3.0637	-1.7945	-1.2693	-0.9191
0.0313	0.1313	-0.3939	-1.3130	-2.1884	-1.8382	-1.2693	-0.9191
0.0625	-0.0438	-0.4814	-0.9629	-1.3568	-1.8382	-1.3130	-0.9191
0.1250	-0.2626	-0.5252	-0.8753	-1.1380	-1.8382	-1.3130	-0.9191
0.2500	-0.3064	-0.4814	-0.6565	-0.8316	-1.5756	-1.4006	-0.9629
0.3760	-0.3939	-0.5252	-0.6565	-0.7878	-1.0066	-1.2693	-1.0504
0.5000	-0.4377	-0.5252	-0.6127	-0.7003	-0.7003	-1.0942	-1.0066
0.6250	-0.5252	-0.5690	-0.6565	-0.7003	-0.6127	-0.8753	-1.0066
0.7500	-0.5690	-0.6127	-0.7003	-0.6565	-0.5690	-0.7003	-0.9629
0.8750	-0.7003	-0.6565	-0.8316	-0.7003	-0.5252	-0.5690	-0.8753
0.9375	-0.7878	-0.7440	-1.0066	-0.7440	-0.5690	-0.5690	-0.8753
0.9700	-0.7878	-0.7440	-0.8316	-0.5690	-0.4814	-0.5252	-0.8316
0.9840	-0.7878	-0.7440	-0.6565	-0.4377	-0.4814	-0.5252	-0.8316
0.9925	-0.7878	-0.7440	-0.5690	-0.3939	-0.4377	-0.5252	-0.7878
1.0000	-0.8316	-0.7878	-0.5252	-0.3939	-0.3939	-0.4814	-0.6565
0.0313	-0.6565	0.0438	0.6127	0.8753	0.9629	0.9629	1.0066
0.0625	-0.5690	-0.0438	0.4377	0.7003	0.8316	0.8753	0.8753
0.1250	-0.3939	-0.0438	0.3501	0.5690	0.7003	0.7440	0.7440
0.2500	-0.3939	-0.1313	0.2188	0.3939	0.5252	0.5690	0.5690
0.5000	-0.2626	-0.0875	0.1751	0.3064	0.3939	0.4377	0.3501
0.7500	0.0438	0.0438	0.2626	0.3939	0.4377	0.4377	0.3501
0.8750	0.3064	0.3501	0.5252	0.5252	0.4814	0.4814	0.3939
0.9375	0.3939	0.5252	0.6127	0.6565	0.6127	0.4814	0.3501

TABLE 37

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 7.0 IN. HG.
QPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .1165

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	1.0101	0.9223	-0.0878	-1.3615	-1.1419	-0.8344	-0.6588
0.0078	0.5270	-0.6588	-2.6351	-3.2499	-1.7567	-1.2297	-0.9223
0.0156	0.1318	-0.7466	-2.0641	-3.2060	-1.7567	-1.2297	-0.9223
0.0313	0.0	-0.6149	-1.8006	-2.9425	-1.8006	-1.2736	-0.9223
0.0625	-0.1757	-0.6149	-1.1419	-1.8006	-1.8006	-1.2297	-0.9223
0.1250	-0.3513	-0.6588	-1.0101	-1.2736	-1.8446	-1.2736	-0.9223
0.2500	-0.3953	-0.5709	-0.7905	-0.9223	-1.8006	-1.3175	-0.9662
0.3760	-0.4831	-0.6149	-0.7466	-0.8784	-1.4932	-1.2736	-1.0101
0.5000	-0.5270	-0.6149	-0.7466	-0.7905	-1.0540	-1.1858	-1.0540
0.6250	-0.6149	-0.6588	-0.7466	-0.7905	-0.7466	-1.0540	-1.0540
0.7500	-0.6588	-0.7027	-0.7905	-0.7466	-0.6149	-0.9223	-1.0540
0.8750	-0.7905	-0.7466	-0.9223	-0.7905	-0.5709	-0.7905	-1.0101
0.9375	-0.8784	-0.7905	-1.0979	-0.8784	-0.5709	-0.7905	-1.0101
0.9700	-0.8344	-0.7905	-0.8784	-0.6588	-0.5709	-0.7466	-1.0101
0.9840	-0.8344	-0.7905	-0.7027	-0.5270	-0.5270	-0.7466	-1.0101
0.9925	-0.8784	-0.8344	-0.6149	-0.4831	-0.5270	-0.7466	-0.9662
1.0000	-0.8784	-0.8344	-0.5709	-0.4831	-0.5270	-0.6588	-0.7905
0.0313	-0.3513	0.3074	0.7905	0.9662	1.0540	1.0540	1.0540
0.0625	-0.3074	0.1757	0.6149	0.7905	0.9223	0.9223	0.9662
0.1250	-0.2196	0.1318	0.4831	0.6588	0.7905	0.7905	0.8344
0.2500	-0.2196	0.0439	0.3513	0.4831	0.6588	0.6588	0.6588
0.5000	-0.0878	0.0878	0.3074	0.4392	0.5709	0.4831	0.4831
0.7500	0.1757	0.2196	0.3953	0.4831	0.6149	0.5270	0.4831
0.8750	0.4831	0.5270	0.6588	0.7027	0.6588	0.5709	0.5270
0.9375	0.5709	0.6588	0.7466	0.7905	0.7905	0.6588	0.5270

TABLE 38

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 9.2 IN. HG.
QPSF= 11.8100 LB. PER SQUARE FOOT
CJ= .1498

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	1.0101	0.7466	-0.4831	-1.2736	-1.2297	-0.7905	-0.7466
0.0078	0.3074	-1.0979	-3.0303	-2.5912	-1.7128	-1.2297	-0.9223
0.0156	0.0	-1.0540	-2.5472	-2.5912	-1.7128	-1.2297	-0.9223
0.0313	-0.1318	-0.8344	-1.9324	-2.6351	-1.7567	-1.2297	-0.9223
0.0625	-0.2635	-0.7466	-1.2736	-2.4594	-1.7567	-1.2297	-0.9223
0.1250	-0.4392	-0.7466	-1.0979	-1.6689	-1.7567	-1.2297	-0.9223
0.2500	-0.4392	-0.6149	-0.8344	-0.9662	-1.8006	-1.2736	-0.9662
0.3760	-0.5270	-0.6588	-0.8344	-0.8784	-1.6250	-1.3175	-1.0101
0.5000	-0.5709	-0.6588	-0.7905	-0.7905	-1.2297	-1.2297	-1.0540
0.6250	-0.6588	-0.7027	-0.8344	-0.7905	-0.9223	-1.0979	-1.0540
0.7500	-0.7027	-0.7027	-0.8344	-0.7905	-0.7027	-1.0101	-1.0540
0.8750	-0.7905	-0.7905	-0.9662	-0.8344	-0.6149	-0.9223	-1.0979
0.9375	-0.8344	-0.8784	-1.0979	-0.8784	-0.5709	-0.8784	-1.0979
0.9700	-0.8344	-0.8344	-0.8784	-0.7027	-0.5709	-0.8784	-1.0979
0.9840	-0.8344	-0.8344	-0.7027	-0.6149	-0.5709	-0.8784	-1.0979
0.9925	-0.8784	-0.8344	-0.6149	-0.5709	-0.5709	-0.8784	-1.0540
1.0000	-0.8784	-0.8344	-0.6149	-0.5270	-0.5709	-0.7466	-0.8344
0.0313	-0.1757	0.4392	0.8784	1.0101	1.0540	1.0540	1.0540
0.0625	-0.1757	0.3074	0.7027	0.8784	0.9662	0.9662	1.0101
0.1250	-0.0878	0.2635	0.5709	0.7466	0.8344	0.8344	0.8784
0.2500	-0.0878	0.1757	0.4392	0.5709	0.7027	0.6588	0.7466
0.5000	0.0	0.1757	0.3953	0.5270	0.6149	0.5709	0.5709
0.7500	0.3074	0.3074	0.4831	0.5709	0.6588	0.5709	0.6149
0.8750	0.5270	0.5709	0.7027	0.7466	0.7466	0.6149	0.6149
0.9375	0.6588	0.7027	0.7905	0.8344	0.8344	0.7466	0.7027

TABLE 39

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 11.1 IN. HG.
CPSF= 11.8742 LB. PER SQUARE FOOT
CJ= .1767

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.9610	0.4368	-0.8736	-1.2231	-1.1794	-0.7863	-0.8299
0.0078	0.0874	-1.6599	-3.1887	-2.0967	-1.5288	-1.0483	-0.8736
0.0156	-0.1747	-1.3978	-2.9266	-2.0967	-1.5288	-1.0483	-0.8736
0.0313	-0.2184	-1.0483	-1.8346	-2.0967	-1.5288	-1.0483	-0.8736
0.0625	-0.3494	-0.8736	-1.3104	-2.0967	-1.5725	-1.0483	-0.8736
0.1250	-0.4805	-0.8299	-1.1357	-2.0530	-1.5725	-1.0920	-0.9173
0.2500	-0.4368	-0.6552	-0.8299	-1.4851	-1.6162	-1.1357	-0.9173
0.3760	-0.5242	-0.6989	-0.8299	-0.9173	-1.5288	-1.1794	-1.0047
0.5000	-0.5678	-0.6989	-0.7863	-0.7426	-1.3104	-1.1357	-1.0047
0.6250	-0.6115	-0.7426	-0.7863	-0.7426	-1.0047	-1.0920	-1.0483
0.7500	-0.6552	-0.7863	-0.8299	-0.7426	-0.7863	-1.0483	-1.0483
0.8750	-0.6989	-1.0047	-0.9173	-0.7863	-0.6552	-0.9610	-1.0483
0.9375	-0.7426	-1.2667	-1.0483	-0.8736	-0.6115	-1.0047	-1.0920
0.9700	-0.7426	-1.0920	-0.8299	-0.7863	-0.6115	-1.0047	-1.0483
0.9840	-0.7863	-0.8736	-0.6552	-0.6989	-0.6115	-1.0047	-1.0483
0.9925	-0.7863	-0.7863	-0.6115	-0.6552	-0.6115	-1.0483	-1.0483
1.0000	-0.7863	-0.7426	-0.6115	-0.6115	-0.6115	-0.8299	-0.8299
0.0313	-0.0437	0.6115	0.8736	1.0047	1.0047	1.0047	1.0047
0.0625	-0.0437	0.4805	0.6989	0.8736	0.9610	0.9173	0.9610
0.1250	-0.0437	0.3931	0.5678	0.7426	0.8299	0.8299	0.8736
0.2500	-0.0437	0.3058	0.4805	0.6115	0.6989	0.6989	0.7426
0.5000	0.0437	0.3058	0.4368	0.5678	0.6115	0.6115	0.6115
0.7500	0.3494	0.4368	0.4805	0.6115	0.6552	0.6115	0.6552
0.8750	0.5678	0.6552	0.6989	0.7863	0.7863	0.6989	0.6552
0.9375	0.6115	0.7426	0.7863	0.8299	0.8299	0.7863	0.7426

TABLE 40

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 15.2 IN. HG.
QPSF= 11.8742 LB. PER SQUARE FOOT
CJ= .2332

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.9610	0.1310	-1.3541	-1.3541	-1.1794	-0.8736	-0.9610
0.0078	-0.2621	-2.1840	-3.5381	-1.9656	-1.4415	-1.0047	-0.9173
0.0156	-0.4805	-1.7472	-3.4071	-1.9656	-1.4415	-1.0047	-0.9173
0.0313	-0.4368	-1.3978	-2.2277	-1.9656	-1.4415	-1.0047	-0.9173
0.0625	-0.4805	-1.0047	-1.4851	-1.9656	-1.4851	-1.0047	-0.9173
0.1250	-0.5678	-0.9173	-1.2231	-1.9656	-1.4851	-1.0483	-0.9173
0.2500	-0.5242	-0.7426	-0.9173	-1.8346	-1.5288	-1.0920	-0.9610
0.3760	-0.6115	-0.7426	-0.8736	-1.3541	-1.4851	-1.1357	-0.9610
0.5000	-0.6115	-0.7426	-0.8299	-0.9173	-1.3541	-1.1357	-1.0047
0.6250	-0.6989	-0.8299	-0.8736	-0.7426	-1.1794	-1.1357	-1.0483
0.7500	-0.7426	-0.8736	-0.8736	-0.7426	-1.0047	-1.0920	-1.0483
0.8750	-0.7863	-1.0483	-0.9610	-0.7426	-0.8299	-1.0920	-1.0920
0.9375	-0.7863	-1.2667	-1.0920	-0.7863	-0.7863	-1.1357	-1.0920
0.9700	-0.7863	-1.0920	-0.9173	-0.7426	-0.7863	-1.1357	-1.0920
0.9840	-0.8299	-0.8736	-0.7426	-0.6989	-0.7863	-1.1794	-1.1357
0.9925	-0.8299	-0.7863	-0.6989	-0.6989	-0.8299	-1.2231	-1.1357
1.0000	-0.8299	-0.7426	-0.6989	-0.6552	-0.7426	-1.0047	-0.9173
0.0313	0.1747	0.7426	0.9610	1.0047	1.0483	1.0047	1.0483
0.0625	0.0874	0.5678	0.7863	0.9173	1.0047	0.9610	1.0047
0.1250	0.1310	0.4805	0.6989	0.7863	0.8736	0.8736	0.9173
0.2500	0.0874	0.3931	0.5678	0.6989	0.7426	0.7426	0.8299
0.5000	0.1747	0.3931	0.5242	0.6552	0.6989	0.6552	0.6989
0.7500	0.4368	0.5242	0.5678	0.6989	0.7426	0.6989	0.7426
0.8750	0.6115	0.6989	0.7863	0.8299	0.8299	0.7863	0.7426
0.9375	0.6989	0.7863	0.8299	0.8299	0.8736	0.8299	0.8299

TABLE 41

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 20.0 IN. HG.
QPSF= 11.8742 LB. PER SQUARE FOOT
CJ= .2950

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.8299	-0.3494	-1.4851	-1.5288	-1.1357	-0.9610	-1.0047
0.0078	-0.7863	-2.7519	-2.7519	-1.8783	-1.3104	-1.0047	-0.7863
0.0156	-0.8299	-2.1840	-2.7519	-1.8783	-1.3104	-1.0047	-0.7863
0.0313	-0.6552	-1.5725	-2.7519	-1.9219	-1.3104	-1.0047	-0.7863
0.0625	-0.6552	-1.1357	-2.3151	-1.9219	-1.3104	-1.0047	-0.7863
0.1250	-0.6989	-1.0047	-1.4851	-1.9219	-1.3104	-1.0483	-0.7863
0.2500	-0.6115	-0.7863	-0.9173	-1.9219	-1.3541	-1.0920	-0.8299
0.3760	-0.6552	-0.8299	-0.8736	-1.7035	-1.3978	-1.1357	-0.8299
0.5000	-0.6989	-0.7863	-0.8736	-1.2231	-1.3541	-1.1794	-0.8736
0.6250	-0.7426	-0.8736	-0.8736	-0.9173	-1.2231	-1.1357	-0.8736
0.7500	-0.7863	-0.9610	-0.9173	-0.7426	-1.1357	-1.1357	-0.9173
0.8750	-0.8736	-1.0920	-1.0483	-0.6989	-1.0047	-1.1357	-0.9173
0.9375	-0.9173	-1.3541	-1.2667	-0.7426	-1.0047	-1.1794	-0.9173
0.9700	-0.9610	-1.1794	-1.1357	-0.6989	-1.0483	-1.1794	-0.9610
0.9840	-0.9610	-1.0047	-1.0047	-0.6989	-1.0920	-1.2231	-0.9610
0.9925	-1.0047	-0.9173	-0.9610	-0.6552	-1.1357	-1.2667	-0.9610
1.0000	-1.0047	-0.8736	-0.9173	-0.6552	-0.9610	-1.0047	-0.7863
0.0313	0.4368	0.8299	0.9610	1.0047	1.0047	1.0483	1.0047
0.0625	0.3058	0.6989	0.8736	0.9610	0.9610	1.0047	1.0483
0.1250	0.2621	0.5678	0.7426	0.8736	0.8736	0.8736	1.0047
0.2500	0.2184	0.4805	0.6115	0.7426	0.7863	0.7863	0.9173
0.5000	0.3058	0.4805	0.6115	0.6989	0.7426	0.6989	0.8299
0.7500	0.5242	0.6115	0.6552	0.7426	0.7426	0.6989	0.8299
0.8750	0.6989	0.7426	0.7863	0.8736	0.8299	0.7863	0.8736
0.9375	0.7426	0.7863	0.8299	0.8736	0.8736	0.8736	0.8736

TABLE 42

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 25.2 IN. HG.
QPSF= 11.8742 LB. PER SQUARE FOOT
CJ= .3573

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.4368	-0.8736	-1.4851	-1.6599	-1.1357	-1.0920	-0.7863
0.0078	-1.5725	-3.2760	-2.2714	-1.8346	-1.1794	-0.9173	-0.6989
0.0156	-1.3104	-2.8829	-2.2714	-1.8346	-1.1794	-0.9173	-0.6552
0.0313	-1.0047	-1.6599	-2.2714	-1.8346	-1.1794	-0.9173	-0.6552
0.0625	-0.8299	-1.3104	-2.2714	-1.8783	-1.1794	-0.9173	-0.6552
0.1250	-0.8299	-1.1357	-2.1403	-1.8783	-1.1794	-0.9610	-0.6989
0.2500	-0.6989	-0.8736	-1.4415	-1.9219	-1.2231	-0.9610	-0.6989
0.3760	-0.7426	-0.8736	-0.9610	-1.8346	-1.3104	-1.0047	-0.7426
0.5000	-0.7863	-0.8736	-0.8736	-1.4851	-1.3104	-1.0483	-0.7426
0.6250	-0.8736	-0.9173	-0.9173	-1.1357	-1.2667	-1.0920	-0.7863
0.7500	-0.9610	-1.0047	-0.9610	-0.8736	-1.1794	-1.0920	-0.7863
0.8750	-1.1794	-1.1794	-1.0483	-0.7426	-1.1357	-1.1357	-0.8299
0.9375	-1.6162	-1.4851	-1.2667	-0.6989	-1.1794	-1.1794	-0.8299
0.9700	-1.5725	-1.3541	-1.2231	-0.6989	-1.2231	-1.1794	-0.8299
0.9840	-1.4415	-1.1794	-1.2231	-0.6989	-1.3104	-1.2231	-0.8299
0.9925	-1.3978	-1.0920	-1.1794	-0.6989	-1.3978	-1.2667	-0.7863
1.0000	-1.3541	-1.0920	-1.1794	-0.6989	-1.2231	-1.0483	-0.6989
0.0313	0.6989	0.9173	1.0047	1.0483	1.0483	1.0047	0.9610
0.0625	0.5242	0.7863	0.9173	1.0047	1.0047	1.0047	1.0047
0.1250	0.4805	0.6989	0.8299	0.9173	0.9173	0.9610	1.0047
0.2500	0.3931	0.6115	0.7426	0.8299	0.8299	0.8736	0.9610
0.5000	0.4805	0.6115	0.6989	0.7863	0.7863	0.8299	0.9173
0.7500	0.6552	0.6552	0.7426	0.7863	0.8299	0.8299	0.9173
0.8750	0.7426	0.7863	0.8299	0.8736	0.8736	0.8736	0.9173
0.9375	0.7863	0.8299	0.8299	0.8736	0.8736	0.8736	0.9173

TABLE 43

PRESSURE COEFFICIENTS

D/C= 0.50
PJ GAGE = 32.5 IN. HG.
QPSF= 11.8742 LB. PER SQUARE FOOT
CJ= .4380

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	-0.0874	-1.6162	-1.6599	-1.6599	-1.2231	-1.1357	-0.7426
0.0078	-2.4024	-3.9313	-2.2277	-1.7035	-1.0920	-0.8299	-0.6552
0.0156	-1.8783	-3.7129	-2.1840	-1.7035	-1.0920	-0.8299	-0.6552
0.0313	-1.3541	-2.0530	-2.2277	-1.7035	-1.1357	-0.8299	-0.6552
0.0625	-1.0047	-1.5725	-2.2277	-1.7035	-1.1357	-0.8299	-0.6552
0.1250	-0.9610	-1.3104	-2.2277	-1.7035	-1.1357	-0.8736	-0.6989
0.2500	-0.7426	-1.0047	-1.9656	-1.7909	-1.1794	-0.9173	-0.6989
0.3760	-0.8299	-1.0047	-1.3104	-1.7909	-1.2231	-0.9173	-0.7426
0.5000	-0.8736	-0.9610	-1.0047	-1.6599	-1.2667	-0.9610	-0.7426
0.6250	-0.9610	-1.0483	-0.9610	-1.4415	-1.2667	-0.9610	-0.7863
0.7500	-1.0483	-1.0920	-1.0047	-1.2231	-1.2231	-1.0047	-0.7863
0.8750	-1.3104	-1.3104	-1.0920	-1.0047	-1.2231	-1.0047	-0.8299
0.9375	-1.7472	-1.6162	-1.2667	-0.9610	-1.2667	-1.0483	-0.8299
0.9700	-1.6599	-1.4851	-1.2667	-0.9610	-1.3541	-1.0920	-0.7863
0.9840	-1.5288	-1.3541	-1.2231	-1.0047	-1.4415	-1.0920	-0.7863
0.9925	-1.4415	-1.3104	-1.2231	-1.0483	-1.5288	-1.0920	-0.7863
1.0000	-1.4415	-1.3104	-1.1794	-1.0047	-1.2667	-0.9173	-0.6989
0.0313	0.8299	0.9610	0.9610	1.0047	1.0483	0.9610	0.9173
0.0625	0.6989	0.8299	0.9173	1.0047	1.0483	1.0483	1.0047
0.1250	0.6115	0.7426	0.8299	0.9173	1.0047	1.0047	1.0047
0.2500	0.5242	0.6115	0.6989	0.8299	0.9173	0.9610	0.9610
0.5000	0.5678	0.6115	0.6552	0.7863	0.8736	0.9173	0.9173
0.7500	0.6989	0.6989	0.7426	0.8299	0.8736	0.9173	0.8736
0.8750	0.7863	0.7863	0.7863	0.8736	0.9173	0.9173	0.8736
0.9375	0.7863	0.7863	0.7863	0.8299	0.8736	0.8736	0.8736

TABLE 44

PRESSURE COEFFICIENTS

D/C= 0.25
PJ GAGE = 4.0 IN. HG.
QPSF= 11.9534 LB. PER SQUARE FOOT
CJ= .0679

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.7810	0.9980	0.2170	-1.0414	-0.9980	-0.6509	-0.7377
0.0078	0.8678	-0.1736	-2.1262	-3.2543	-1.7790	-1.1282	-0.7810
0.0156	0.4773	-0.3905	-1.6923	-3.1242	-1.7790	-1.1282	-0.7810
0.0313	0.2170	-0.3905	-1.3451	-2.2997	-1.8224	-1.1282	-0.7810
0.0625	-0.0434	-0.4773	-0.9980	-1.3885	-1.8224	-1.1282	-0.8244
0.1250	-0.2603	-0.5641	-0.9112	-1.1282	-1.8224	-1.1282	-0.8244
0.2500	-0.3037	-0.4773	-1.1282	-0.8244	-1.6055	-1.1716	-0.8678
0.3760	-0.4339	-0.5207	-1.1282	-0.7810	-1.0848	-1.1716	-0.8678
0.5000	-0.4773	-0.5641	-1.0848	-0.6943	-0.6943	-1.0848	-0.9112
0.6250	-0.5641	-0.6075	-1.1282	-0.6943	-0.6075	-0.9980	-0.9546
0.7500	-0.6075	-0.6075	-1.1282	-0.6509	-0.5207	-0.8678	-0.9546
0.8750	-0.7810	-0.7377	-1.2583	-0.6943	-0.4773	-0.7810	-0.9112
0.9375	-0.9546	-0.8244	-1.3885	-0.7377	-0.5207	-0.7377	-0.9112
0.9700	-0.8678	-0.7810	-1.2583	-0.5207	-0.4773	-0.6943	-0.8678
0.9840	-0.8678	-0.7810	-1.0848	-0.4339	-0.4339	-0.6943	-0.8678
0.9925	-0.9112	-0.8244	-0.9980	-0.3905	-0.3905	-0.6943	-0.8244
1.0000	-0.9546	-0.8244	-0.9546	-0.3905	-0.3905	-0.6075	-0.7377
0.0313	-0.8678	0.0434	0.7377	0.9546	0.9980	1.0414	1.0414
0.0625	-0.6943	-0.0434	0.5207	0.7810	0.8678	0.9112	0.9980
0.1250	-0.7377	-0.0434	0.4339	0.6509	0.7377	0.8244	0.9112
0.2500	-0.5207	-0.1736	0.3037	0.5207	0.6075	0.6943	0.8244
0.5000	-0.0434	-0.1302	0.2603	0.4773	0.6075	0.6509	0.7377
0.7500	-0.1302	0.1302	0.3471	0.5207	0.6075	0.6075	0.6509
0.8750	0.3905	0.3905	0.6075	0.5641	0.6509	0.6509	0.6509
0.9375	0.5641	0.5207	0.6943	0.6943	0.6943	0.6509	0.6509

PRESSURE COEFFICIENTS

D/C= 0.25
PJ GAGE = 7.0 IN. HG.
QPSF= 11.9127 LB. PER SQUARE FEET
CJ= .1155

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.9143	0.8708	-0.2612	-1.2626	-1.0449	-0.6966	-0.7837
0.0078	0.6096	-0.5660	-2.5688	-2.9171	-1.6545	-0.9143	-0.7837
0.0156	0.2177	-0.6531	-2.0028	-2.8736	-1.6545	-0.9143	-0.7402
0.0313	0.0435	-0.5660	-1.7851	-2.7865	-1.6545	-0.9143	-0.7402
0.0625	-0.1306	-0.5660	-1.0449	-1.7851	-1.6545	-0.9143	-0.7402
0.1250	-0.3483	-0.6096	-0.9579	-1.1756	-1.6545	-0.9579	-0.7837
0.2500	-0.3483	-0.5225	-0.6966	-0.8272	-1.6545	-1.0014	-0.7837
0.3760	-0.4354	-0.5660	-0.6966	-0.7837	-1.3062	-1.0449	-0.8272
0.5000	-0.4789	-0.5660	-0.6531	-0.6966	-0.9143	-1.0014	-0.8708
0.6250	-0.5660	-0.6096	-0.6966	-0.6966	-0.6531	-1.0014	-0.9143
0.7500	-0.6096	-0.6096	-0.6966	-0.6531	-0.5660	-0.9579	-0.9143
0.8750	-0.7402	-0.6966	-0.7837	-0.6966	-0.5225	-0.9143	-0.9143
0.9375	-0.8272	-0.7402	-0.9579	-0.7402	-0.5225	-0.8708	-0.8708
0.9700	-0.7837	-0.7402	-0.7837	-0.5660	-0.4789	-0.8272	-0.8708
0.9840	-0.8272	-0.7402	-0.6096	-0.4789	-0.4789	-0.8272	-0.8272
0.9925	-0.8272	-0.7402	-0.5225	-0.4354	-0.4354	-0.8272	-0.7837
1.0000	-0.8708	-0.7837	-0.5225	-0.4354	-0.4354	-0.6966	-0.6966
0.0313	-0.4789	0.3048	0.8272	0.9579	0.9579	0.9579	1.0014
0.0625	-0.4354	0.1742	0.6531	0.7837	0.8272	0.9143	1.0014
0.1250	-0.3483	0.1306	0.5225	0.6531	0.6966	0.7837	0.9143
0.2500	-0.3483	0.0871	0.4354	0.5225	0.6096	0.6966	0.8272
0.5000	-0.1742	0.1306	0.4354	0.5660	0.6531	0.6966	0.7837
0.7500	-0.3048	0.3483	0.4789	0.6096	0.6966	0.7402	0.7837
0.8750	0.0435	0.5660	0.6966	0.7402	0.7837	0.7402	0.8272
0.9375	0.0871	0.6531	0.7402	0.7837	0.8272	0.7837	0.8272

PRESSURE COEFFICIENTS

D/C= 0.25
PJ GAGE = 9.2 IN. HG.
QPSF= 11.9298 LB. PER SQUARE FOOT
CJ= .1484

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	1.0000	0.8261	-0.4782	-1.2608	-1.1739	-0.8261	-0.9130
0.0078	0.4782	-0.9565	-2.9564	-2.6956	-1.7826	-1.0869	-0.8695
0.0156	0.1304	-0.9130	-2.5217	-2.6521	-1.7826	-1.0869	-0.8695
0.0313	-0.0435	-0.6956	-1.7391	-2.6956	-1.8260	-1.0869	-0.8695
0.0625	-0.1739	-0.7391	-1.1739	-2.4347	-1.8260	-1.0869	-0.8695
0.1250	-0.3478	-0.6956	-1.0434	-1.5217	-1.8695	-1.1304	-0.8695
0.2500	-0.3478	-0.5652	-0.7826	-0.9130	-1.7826	-1.1739	-0.8695
0.3760	-0.4782	-0.6087	-0.7826	-0.8261	-1.4347	-1.1739	-0.9130
0.5000	-0.5217	-0.6087	-0.7391	-0.7391	-1.0000	-1.1739	-0.9565
0.6250	-0.5652	-0.6522	-0.7391	-0.7391	-0.7391	-1.0869	-1.0000
0.7500	-0.6522	-0.6522	-0.7391	-0.6956	-0.6087	-1.0434	-1.0000
0.8750	-0.7391	-0.7391	-0.8695	-0.7391	-0.5652	-0.9565	-0.9565
0.9375	-0.7391	-0.7826	-1.0000	-0.8261	-0.5652	-0.9130	-0.9565
0.9700	-0.8261	-0.7826	-0.8261	-0.6087	-0.5217	-0.9130	-0.9130
0.9840	-0.8261	-0.7826	-0.6522	-0.5217	-0.5217	-0.9130	-0.9130
0.9925	-0.8261	-0.7826	-0.5652	-0.4782	-0.5217	-0.9130	-0.8695
1.0000	-0.8695	-0.8261	-0.5652	-0.4782	-0.5217	-0.7826	-0.7826
0.0313	-0.3043	0.4782	0.9130	1.0434	1.0434	1.0869	1.0869
0.0625	-0.2609	0.3478	0.7391	0.8695	0.9130	1.0000	1.0434
0.1250	-0.1739	0.3043	0.6522	0.6956	0.7391	0.8695	1.0000
0.2500	-0.2174	0.2174	0.5217	0.6087	0.6522	0.7826	0.9130
0.5000	-0.0435	0.2609	0.5652	0.6522	0.6956	0.7826	0.8695
0.7500	0.3043	0.4782	0.6087	0.7391	0.7826	0.8261	0.9130
0.8750	0.5652	0.6522	0.7826	0.8261	0.8261	0.8695	0.9130
0.9375	0.6087	0.7391	0.8695	0.8695	0.9130	0.9130	0.9130

TABLE 47

PRESSURE COEFFICIENTS

D/C= 0.25
PJ GAGE = 11.1 IN. HG.
QPSF= 11.9298 LB. PER SQUARE FOOT
CJ= .1759

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	1.0434	0.6087	-0.7391	-1.0000	-1.3043	-0.9565	-0.9565
0.0078	0.3043	-1.3913	-3.0869	-2.4347	-1.8695	-1.1739	-0.8695
0.0156	-0.0435	-1.2174	-2.7825	-2.4347	-1.8695	-1.1739	-0.8695
0.0313	-0.1304	-0.9130	-1.7826	-2.4782	-1.8695	-1.1739	-0.8695
0.0625	-0.3043	-0.8261	-1.2608	-2.3912	-1.8695	-1.1739	-0.9130
0.1250	-0.4348	-0.7826	-1.0869	-1.7826	-1.8695	-1.1739	-0.9130
0.2500	-0.4348	-0.6087	-0.8261	-0.9565	-1.8260	-1.2174	-0.9565
0.3760	-0.5217	-0.6522	-0.7826	-0.8261	-1.4347	-1.2608	-1.0000
0.5000	-0.5652	-0.6522	-0.7391	-0.7826	-1.0434	-1.2174	-1.0000
0.6250	-0.6522	-0.6956	-0.7826	-0.7391	-0.7391	-1.1304	-1.0434
0.7500	-0.6956	-0.7391	-0.7826	-0.7391	-0.6522	-1.0434	-1.0434
0.8750	-0.7826	-0.9130	-0.8695	-0.7391	-0.6087	-1.0000	-1.0000
0.9375	-0.8261	-1.1304	-1.0000	-0.7826	-0.6087	-0.9565	-1.0000
0.9700	-0.8261	-1.0434	-0.7826	-0.6522	-0.6087	-0.9565	-0.9565
0.9840	-0.8261	-0.9565	-0.6087	-0.5652	-0.6087	-0.9130	-0.9565
0.9925	-0.8261	-0.9130	-0.5652	-0.5217	-0.5652	-0.9130	-0.9130
1.0000	-0.8261	-0.8695	-0.5652	-0.4782	-0.5652	-0.8261	-0.8261
0.0313	-0.0870	0.6522	0.9565	1.0000	1.0434	1.0869	1.0869
0.0625	-0.1304	0.4782	0.7826	0.8695	0.9130	1.0000	1.0434
0.1250	-0.0435	0.4348	0.6522	0.6956	0.7391	0.8695	0.9565
0.2500	-0.0870	0.3913	0.5652	0.6087	0.6522	0.7826	0.8695
0.5000	0.0870	0.3913	0.6087	0.6522	0.6956	0.8261	0.9130
0.7500	0.3913	0.5652	0.6522	0.7391	0.7826	0.8695	0.9565
0.8750	0.6087	0.7391	0.8261	0.8261	0.8261	0.9130	0.9565
0.9375	0.6956	0.8261	0.8695	0.8695	0.8695	0.9565	0.9565

TABLE 48

PRESSURE COEFFICIENTS

D/C= 0.25
PJ GAGE = 15.2 IN. HG.
GPSF= 11.9534 LB. PER SQUARE FOOT
CJ= .2318

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.9980	0.1302	-1.0848	-1.3885	-1.4753	-1.1282	-0.9980
0.0078	-0.0868	-2.0828	-3.5147	-2.5167	-2.0394	-1.3017	-0.9546
0.0156	-0.3037	-1.6489	-3.2977	-2.4733	-2.0394	-1.3017	-0.9546
0.0313	-0.3037	-1.3017	-1.8658	-2.4299	-2.0394	-1.3017	-0.9546
0.0625	-0.3905	-0.9546	-1.3885	-2.3865	-2.0828	-1.3017	-0.9546
0.1250	-0.5207	-0.8678	-1.1716	-2.0394	-2.1262	-1.3017	-0.9546
0.2500	-0.4773	-0.6943	-0.8678	-1.1716	-1.8658	-1.3885	-0.9980
0.3760	-0.5641	-0.7377	-0.8244	-0.8244	-1.2150	-1.3451	-1.0414
0.5000	-0.6075	-0.6943	-0.7810	-0.7810	-0.8678	-1.2583	-1.0848
0.6250	-0.6509	-0.7810	-0.7810	-0.7810	-0.7810	-1.1282	-1.0848
0.7500	-0.6943	-0.8244	-0.8244	-0.7810	-0.7377	-1.0414	-1.0848
0.8750	-0.7377	-0.9546	-0.8678	-0.7810	-0.6943	-0.9546	-1.0414
0.9375	-0.7377	-1.1716	-0.9980	-0.8678	-0.7377	-0.9112	-1.0414
0.9700	-0.7810	-0.9546	-0.7377	-0.7377	-0.7377	-0.9112	-0.9980
0.9840	-0.7810	-0.7377	-0.6075	-0.6509	-0.6943	-0.9112	-0.9546
0.9925	-0.8244	-0.6509	-0.5641	-0.6075	-0.6943	-0.9112	-0.9546
1.0000	-0.8244	-0.6509	-0.5641	-0.6075	-0.6943	-0.8678	-0.8678
0.0313	0.1736	0.7810	0.9546	0.9980	1.0414	1.0848	1.0848
0.0625	0.1302	0.6509	0.7810	0.8244	0.9112	0.9980	1.0414
0.1250	0.1302	0.5641	0.6509	0.6509	0.7377	0.9546	0.9546
0.2500	0.1302	0.5207	0.5641	0.5641	0.6075	0.7810	0.8678
0.5000	0.2603	0.5641	0.6075	0.6509	0.6509	0.8244	0.9980
0.7500	0.5207	0.6509	0.6943	0.6943	0.7377	0.9112	0.9546
0.8750	0.6943	0.7810	0.7810	0.6509	0.5641	0.5641	0.4339
0.9375	0.7377	0.8244	0.8244	0.7377	0.6509	0.6943	0.5641

TABLE 49

PRESSURE COEFFICIENTS

C/C= 0.25
PJ GAGE = 20.0 IN. HG.
QPSF= 11.9234 LB. PER SQUARE FOOT
CJ= .2940

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.8265	-0.2175	-1.5225	-1.4790	-4.3065	-1.3485	-1.0440
0.0078	-0.6090	-2.4795	-3.7845	-2.6100	-2.3490	-1.5660	-0.8700
0.0156	-0.6525	-2.0010	-3.6540	-2.6100	-2.3490	-1.5660	-0.8700
0.0313	-0.5220	-1.4355	-2.2620	-2.6100	-2.3490	-1.5660	-0.8700
0.0625	-0.5220	-1.0005	-1.5225	-2.5230	-2.3490	-1.5660	-0.8700
0.1250	-0.5655	-0.9135	-1.2615	-1.8705	-2.2620	-1.5660	-0.8700
0.2500	-0.5220	-0.6960	-0.9135	-1.0005	-1.6095	-1.4790	-0.8700
0.3760	-0.5655	-0.7395	-0.8700	-0.9135	-1.0875	-1.3485	-0.9135
0.5000	-0.6090	-0.7395	-0.8265	-0.8700	-0.9135	-1.1745	-0.9135
0.6250	-0.6525	-0.7830	-0.8265	-0.8700	-0.8700	-1.0440	-0.9570
0.7500	-0.6960	-0.8265	-0.8265	-0.8265	-0.8265	-0.9570	-0.9570
0.8750	-0.6960	-0.9135	-0.9135	-0.8700	-0.8700	-0.9135	-0.9570
0.9375	-0.6960	-1.0440	-1.0005	-1.0005	-0.9570	-0.9135	-0.9570
0.9700	-0.6960	-0.8265	-0.7830	-0.8700	-0.9570	-0.9135	-0.9135
0.9840	-0.7395	-0.6960	-0.6525	-0.7395	-0.9570	-0.9570	-0.8700
0.9925	-0.7395	-0.6090	-0.6090	-0.6960	-0.9570	-0.9570	-0.8700
1.0000	-0.7830	-0.6090	-0.6090	-0.6960	-0.9570	-1.0005	-0.9135
0.0313	0.4350	0.8265	0.8700	0.9570	0.9570	1.0440	1.0440
0.0625	0.3480	0.6525	0.6960	0.7830	0.7830	0.9570	1.0440
0.1250	0.3480	0.5655	0.5655	0.6090	0.6525	0.8265	0.9570
0.2500	0.3480	0.5220	0.5220	0.5220	0.5655	0.7830	0.9135
0.5000	0.4350	0.6090	0.5655	0.6090	0.6960	0.8700	0.9135
0.7500	0.6090	0.6525	0.4785	0.4350	0.3480	0.3480	0.2175
0.8750	0.7395	0.7395	0.3915	0.1740	-0.0870	-0.1305	-0.2175
0.9375	0.7830	0.7830	0.4350	0.3480	0.2175	0.0870	0.0

PRESSURE COEFFICIENTS

D/C= 0.25
PJ GAGE = 25.2 IN. HG.
QPSF= 11.9234 LB. PER SQUARE FOOT
CJ= .3561

	ANGLE OF ATTACK						
X/C	-5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.5655	-0.5220	-1.4355	-1.7400	-1.9575	-1.6530	-1.3050
0.0078	-1.2180	-2.9145	-3.9585	-3.3060	-2.9145	-1.9140	-1.2615
0.0156	-1.0875	-2.3925	-3.6540	-3.1320	-2.8275	-1.9140	-1.2615
0.0313	-0.7830	-1.4790	-2.0445	-2.8710	-2.7405	-1.9140	-1.2615
0.0625	-0.7395	-1.1310	-1.5660	-2.5230	-2.5230	-1.8270	-1.1745
0.1250	-0.7395	-1.0005	-1.3050	-1.8270	-2.1315	-1.7835	-1.1745
0.2500	-0.5655	-0.7830	-0.9570	-1.1310	-1.3920	-1.5660	-1.1310
0.3760	-0.6525	-0.7830	-0.9570	-1.0005	-1.1310	-1.3485	-1.0440
0.5000	-0.6960	-0.7830	-0.8700	-0.9135	-1.0005	-1.1745	-1.0440
0.6250	-0.7395	-0.8265	-0.9135	-0.9135	-0.9570	-1.0440	-1.0440
0.7500	-0.8265	-0.8700	-0.9135	-0.9135	-0.9135	-1.0005	-1.0440
0.8750	-0.9570	-0.9570	-0.8265	-1.0005	-0.9570	-0.9570	-1.0440
0.9375	-1.2180	-1.1310	-1.1310	-1.1745	-1.0440	-1.0440	-1.0440
0.9700	-1.1745	-0.9135	-0.9135	-1.0875	-1.0875	-1.0875	-1.0005
0.9840	-1.1310	-0.7395	-0.7830	-1.0440	-1.1310	-1.1310	-1.0005
0.9925	-1.0875	-0.6525	-0.7395	-1.0005	-1.1745	-1.1745	-1.0005
1.0000	-1.0875	-0.6525	-0.7395	-0.9570	-1.1745	-1.2180	-1.1310
0.0313	0.6525	0.8265	0.8700	0.8700	0.9135	0.9135	0.9570
0.0625	0.5220	0.6525	0.6960	0.6960	0.7830	0.8700	0.9135
0.1250	0.4785	0.5655	0.5220	0.5655	0.6525	0.7395	0.8265
0.2500	0.4785	0.5220	0.4785	0.5220	0.6090	0.7395	0.8700
0.5000	0.5655	0.6090	0.5655	0.6525	0.7395	0.7830	0.8700
0.7500	0.6090	0.3480	0.0435	-0.0870	-0.1305	-0.3915	-0.3915
0.8750	0.7395	0.2610	-0.2175	-0.4350	-0.5220	-0.6525	-0.6090
0.9375	0.7830	0.3915	0.0435	-0.0870	-0.2175	-0.3480	-0.3480

PRESSURE COEFFICIENTS

D/C= 0.25
PJ GAGE = 32.5 IN. HG.
CPSF= 11.9534 LB. PER SQUARE FOOT
CJ= .4354

X/C	ANGLE OF ATTACK -5.0	-2.5	0.0	2.5	5.0	7.5	10.0
0.0	0.2603	-0.6943	-1.3885	-2.1696	-2.2563	-2.0828	-1.6489
0.0078	-1.9092	-3.3411	-4.4259	-4.6863	-3.7317	-2.8204	-2.2563
0.0156	-1.5187	-2.6035	-3.7750	-4.0788	-3.3845	-2.6903	-2.1262
0.0313	-1.1282	-1.6923	-2.2130	-3.0374	-2.9940	-2.5167	-1.9960
0.0625	-0.9112	-1.3885	-1.7357	-2.3431	-2.6469	-2.3431	-1.8658
0.1250	-0.8244	-1.1716	-1.4753	-1.7357	-2.1696	-2.0394	-1.7357
0.2500	-0.6943	-0.9112	-1.0848	-1.2150	-1.4753	-1.6489	-1.4319
0.3760	-0.7377	-0.9112	-1.0414	-1.1282	-1.2150	-1.3017	-1.2583
0.5000	-0.7810	-0.9112	-0.9980	-1.0414	-1.0848	-1.2150	-1.2150
0.6250	-0.8678	-0.9546	-0.9980	-1.0414	-1.0414	-1.1282	-1.1716
0.7500	-0.9546	-0.9980	-1.0414	-0.9980	-1.0414	-1.0848	-1.1716
0.8750	-1.1282	-1.1282	-1.1282	-1.1282	-1.0414	-1.1282	-1.1716
0.9275	-1.4319	-1.3451	-1.3885	-1.3451	-1.2150	-1.1716	-1.2150
0.9700	-1.2150	-1.1282	-1.2583	-1.3451	-1.2583	-1.2150	-1.2150
0.9840	-1.0414	-0.9546	-1.1282	-1.3017	-1.3017	-1.2583	-1.2150
0.9925	-0.9546	-0.8678	-1.0414	-1.3017	-1.3885	-1.3017	-1.2583
1.0000	-0.9546	-0.8678	-0.9980	-1.2583	-1.4319	-1.4319	-1.4319
0.0313	0.7810	0.6943	0.7377	0.8244	0.7810	0.7810	0.7810
0.0625	0.6509	0.6075	0.5207	0.6509	0.6943	0.7377	0.7377
0.1250	0.5641	0.4339	0.4339	0.5207	0.6509	0.6943	0.7810
0.2500	0.5641	0.3037	0.4339	0.5641	0.6943	0.7810	0.8678
0.5000	0.6075	0.1302	0.5207	0.6075	0.7377	0.7810	0.8244
0.7500	0.3037	-0.3471	-0.4339	-0.5641	-0.7810	-0.9546	-0.9112
0.8750	0.2603	-0.4339	-0.6943	-0.8244	-0.9546	-1.0414	-0.9980
0.9375	0.3471	-0.1736	-0.3037	-0.4339	-0.6075	-0.7377	-0.7377

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Jet Flap

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Experiments were conducted in the Naval Postgraduate School low-speed wind tunnel to investigate the low-speed aerodynamic characterictics of an airfoil with a jet flap deflected at ninety degrees, in and out of ground effect. These tests consisted of detailed static pressure measurements on the airfoil, and helium bubble flow visualization studies of the resulting flow patterns. Substantial

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Block 20 - ABSTRACT (Cont.)

agreement was obtained with previous experiments by N. A. Dimmock at the National Gas Turbine Establishment in England.

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